Report of Activities on Peatland Research

1982

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FOREWORD

This Report of Activities will summarize the work carried out by the Land Resource Research Institute, Agriculture Canada on peatland projects supported by NRC, Peat Forum. These projects were set up to characterize the peatlands in the St. Lawrence Lowland and along the Pacific Coast of British Columbia. The information obtained will be used to develop a peatland inventory methodology to generate information on the characteristics of peatlands, the volume of the various peat materials and an estimate of the energy content of these deposits. In addition to this, a project was established to set up a computerized wetland registry system capable of storing and evaluating peatland studies. Papers included in this Report of Activities describe the work carried out during 1982, give a preliminary evaluation of the data obtained and indicate the plans for 1983.

AVANT-PROPOS

Le présent rapport résume les travaux effectués par l'Institut de recherches sur les terres du ministère de l'Agriculture du Canada dans le cadre des projets sur les tourbières financés par le Centre national de recherches et le Comité interministériel sur la tourbe. Ces projets ont été mis en oeuvre pour définir les caractéristiques des basse-terres du Saint-Laurent et celles de la plaine littorale du Pacifique, en Colombie-Britannique. Les données recueillies serviront à l'élaboration de méthodes d'inventaire qui permettront de déterminer les caractéristiques des tourbières et le volume des différents types de tourbes et d'en évaluer le potentiel énergétique. De plus, on a mix sur pied un projet pour appliquer un système d'enrigistrement des sols marécageux capable d'emmagasiner et d'évaluer les résultats de ces études. Les documents inclus dans le présent rapport d'activités décribent les travaux effectués en 1982 et présentent une évaluation préliminaire des données recueillies et un aperçu des plans pour 1983.

TABLE OF CONTENTS

Page

Foreward..... i

Summary..... 1

Peatlands of the Pacific Coast of
British Columbia - C. Tarnocai..... 2

Vegetation of Coastal Peatlands in
British Columbia - C.J. Selby.....16

Peatland Soils and Soil Systems of
Coastal British Columbia - D.E. Moon.....25

Soil and Vegetation Relationships of Coastal Peatlands -
D.E. Moon and C.J. Selby.....31

Peatlands of the Ontario Portion of St. Lawrence
Lowland - A. Eagle.....38

Tourbières des Basses-Terres du St-Laurent
du Québec - L. Grenon.....51

Computerized Canadian Wetland Registry -
C. Tarnocai.....70

SUMMARY

The St. Lawrence Lowland and the Pacific Coast of British Columbia were selected as areas on which to carry out peatland studies. The information obtained will be used to develop, by 1985, a peatland inventory methodology which will be able to provide not only the area of the peatlands but also the volume of the various peat materials and an estimate of the energy value of these peat deposits. In conjunction with these studies a computerized Wetland Registry will be developed to store and evaluate peatland data. This will be operational by 1985.

In this first year of the St. Lawrence Lowland and Pacific Coast peatland projects a literature review was carried out in order to determine what information was available on peatlands in these areas. A field methodology was developed for data collection and the training of personnel was carried out to ensure that uniform and high quality data would be collected. During the 1982 field season the main emphasis was on finalizing the sampling method and exmining and sampling representative peatlands throughout the study area. This was necessary in order to establish their characteristics and their distribution in various geographic regions. The bulk of the sampling will be carried out in 1983 and the data collected in 1982 and 1983 will be used to calculate peat volumes and energy values. The third and final year (1984-1985) will be spent on testing, verification and preparation of a final report.

Two inventory methodologies will be developed. The first, based on transect sampling, is a traditional inventory and the second, based on soil and vegetation properties, is a computerized inventory.

A computerized Wetland Registry is being developed to store and evaluate peatland data generated by these and future peat projects. In 1982-1983 a computer-compatible Wetland Registry will be set up and a trial run conducted, including the input and output of some peatland data collected in 1982. All peatland data collected during these peat projects will be stored and evaluated using this computerized system.

PEATLANDS OF THE PACIFIC COAST OF BRITISH COLUMBIA

Charles Tarnocai

ABSTRACT

The project was established to characterize the peatlands along the Pacific Coast of British Columbia and, using this information, to develop a peatland inventory methodology which would provide volume and energy estimates for the peat deposits. This paper summarizes the results obtained during the first year of this three-year project. Thirty-two peatlands were described and sampled using the transect method. Bogs were the most common peatlands found in the area; fens, which were also present, were much less common. The deepest peat deposit was 681 cm. The average depth of the peat deposits was 300 to 380 cm for dome bogs, flat bogs and fens. Peat materials associated with these peatlands were moderately well to well decomposed (von Post humification value of 3 to 6) with the exception of sphagnum peat which had a much lower humification value. Both filling-in and gradual build-up processes played a very important role in the development of the peatlands. Invasion of the former peatlands by upland forests was a common phenomenon.

INTRODUCTION

Although peatlands are common along the Pacific Coast of British Columbia, little information is available concerning their characteristics as related to peatland type, their development, and the chemical and physical composition of the associated peat materials.

Rigg and Richardson (1934) carried out studies of some bogs in the Fraser River Delta and on southern Vancouver Island. A number of cross-sections were presented and theories on bog development were discussed. Hansen (1950) provided information about the pollen distribution in three peat profiles from the Victoria, Qualicum Beach and Courtenay areas of Vancouver Island. On southeastern Vancouver Island Maas (1972) studied the organic soils and their characteristics as related to their management and fertility requirements.

Peatland studies carried out by Rigg (1940), Dachnowski-Stokes (1941), Heusser (1952) and Heiland (1971) in southern Alaska provide some of the background information for the north coast of British Columbia and the Queen Charlotte Islands.

Soil and terrain mapping, carried out by both federal and provincial governments, has covered Vancouver Island and some

selected areas of the mainland coast and the Queen Charlotte Islands. The information presented on these maps provides areal coverage of the peatlands but little or no information is given concerning the statigraphy of the deposit since soil maps describe only the upper 160 cm of the peat.

This three-year project, supported by the N.R.C., was set up to characterize the Pacific Coast peatlands in British Columbia and to develop an inventory methodology by means of which peat volume and energy estimates could be derived. In conjunction with this project, other work was also carried out to study the coastal peatland vegetation (Selby 1982) and to develop a computerized inventory methodology (Moon and Selby 1982). This report summarizes the activities in the coastal peatland studies during the first year of this project and provides a preliminary evaluation of field data collected during the 1982 field work.

ACTIVITIES DURING 1982

Prior to the field season a literature review was carried out to gather background data concerning the peatlands of the area. A sampling system was established with the objective of visiting and sampling a variety of peatlands throughout the study area in order to determine the distribution and characteristics of the peatlands. The sampling technique was then finalized and special problems were identified for future work.

During the 1982 field work, 32 peatlands were visited in the study area (Figure 1). Twenty-three of these peatlands were sampled in detail using the transect method of data collection. The remainder were examined by using only a single boring or a number of random borings. Altogether 156 peat profiles were examined in detail and 52 of these were sampled As a result of this, 222 peat, 38 bulk density, 45 radiocarbon, and 15 water samples were collected.

METHODS

Field Methods

Since the study area was extremely mountainous and dissected by inlets, bays and lakes, a helicopter was generally used for transportation. This transportation system not only accelerated the field work but also provided an excellent opportunity for viewing the peatlands from the air, noting their characteristics and selecting representative peatlands for sampling. Landings were made on these selected peatlands and information was collected.

This information was collected along a transect. The direction of the transect was selected so as to intersect the

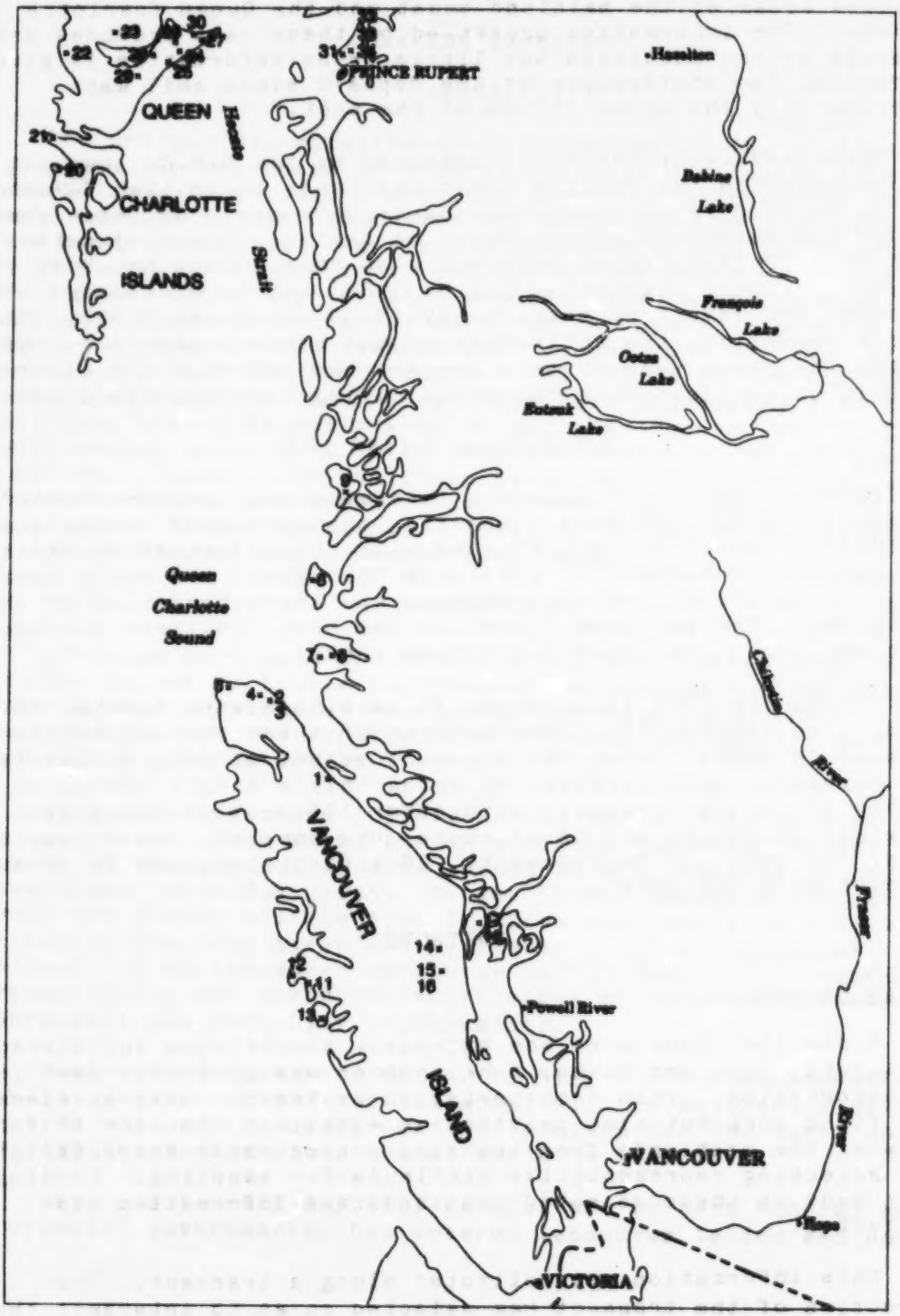


Figure 1. Location of sample sites.

greatest variety of peat landforms and vegetation types and to provide a representative cross-section of the various types of peat materials in the peat deposit. A few exploratory bore holes were usually made before the location of the transect was established to ensure that the above criteria were met. This was then followed by systematic peat boring along the transect line. The bore holes were made by using a Mini-Macauley peat auger in each peat landform and also at places where changes in surface topography and vegetation (and therefore usually in peat depth and material) took place. In all cases these holes extended to the mineral soil and their locations were marked. The material derived from this augering was described and sampled for physical and chemical analysis. Additional samples of known volume were taken for bulk density determinations and samples were collected for C14 analysis. The data were recorded on the Canadian Wetland Registry forms.

The total length of the transect was measured using a meter tape and the positions of sample sites, peat landform and vegetation boundaries, and other features were also measured and recorded. The entire transect was leveled using an Abney hand leveler. The transect was then plotted and a cross-section of the peatland was drawn, based on the survey information and the bore hole data.

Laboratory Analysis

The peat samples will be analysed for pH, organic carbon, nitrogen, electrical conductivity, cation exchange capacity, exchangeable cations, fiber content, calorific values, and ash content according to the methodology described by McKeague (1978). Other peat samples will be analysed for bulk density, water content and for radiocarbon date.

DISCUSSION

Peat Landforms

Bogs were the most commonly occurring peatlands in the study area with slope bogs being the dominant peat landform on northern Vancouver Island and the north coast areas, including the Queen Charlotte Islands. Flat bogs and basin bogs were found throughout the study area although they were less common than slope bogs. Dome bogs were rare and were found in only two locations during the study. These dome bogs were poorly developed and were elevated less than one meter above the surrounding peatland.

Although they were not very common, fens were found throughout the study area and were located mainly along streams,

in shallow basins and at the head of bays. The Campbell River area of Vancouver Island contained the largest area of fens.

The deepest peat deposit, 681 cm (Table 1), was found in a basin bog at site 11, followed by a 545 cm deep dome bog at site 16 and a 495 cm deep slope bog at site 26. The average peat depths were 380 cm in basin bogs, 300 cm in dome bogs, 180 cm in slope bogs and 140 cm in flat bogs (Table 1).

In fens the deepest peat deposit was found in a stream fen (324 cm) at site 18. The average peat depths were 210 cm in stream fens and 130 cm in horizontal fens (Table 1).

These peatlands were composed dominantly of sedge peat (Figures 2 and 3). Sphagnum peat, found on the surface of bogs, was generally thin. Sedimentary peat, which occurred in nearly all peatlands, generally formed a thin layer although, in peatlands developed in deep basins, its thickness could reach one meter or more.

The surfaces of the bogs were associated with various types and shapes of shallow pools. In slope bogs these pools were part of an intricate drainage system along the slope (Figure 2). A steep dam, composed mainly of vegetation debris washed down and trapped by living vegetation, formed on the down slope side of these pools. Very often small streams were associated with the slope bogs and stream fens. The stream beds generally cut into the peat deposit and, only if the peat was shallow, did the stream reach the mineral soil.

The National Wetland Classification (Tarnocai 1980) was used to classify the peat landforms for this study. Because of the high rainfall in these coastal areas and the acid mineral soils and rocks, the classification of some bogs and fens was difficult. During the field work pH readings were taken in both the surface peat and the water using Duotest double strip pH paper. The water samples were taken from pools and from water tracks. It was found that the pH of the surface peat in bogs ranged between 4.0 and 4.3 and in fens between 4.7 and 4.9 while the pH of the water was 5 and higher for fens and less than 5 for bogs (Table 2). It appears that the pH of the surface peat and water will provide a reliable criterion for the classification of fens and bogs. This, however, will be further tested next year.

Peat Materials

Peat materials were named according to their botanical composition. If peat was derived mainly from a single group of plants (e.g. Sphagnum mosses) and the peat was composed of approximately 75% or more of this plant material, then it was

Table 1. The average and maximum depths of peat deposits in various peat landforms.

Peat landform	Number of peatlands	Average depth cm	Maximum depth cm
Slope bog	15	180	495
Flat bog	8	140	344
Basin bog	2	380	681
Dome bog	2	300	545
Stream fen	3	210	324
Horizontal fen	2	130	241

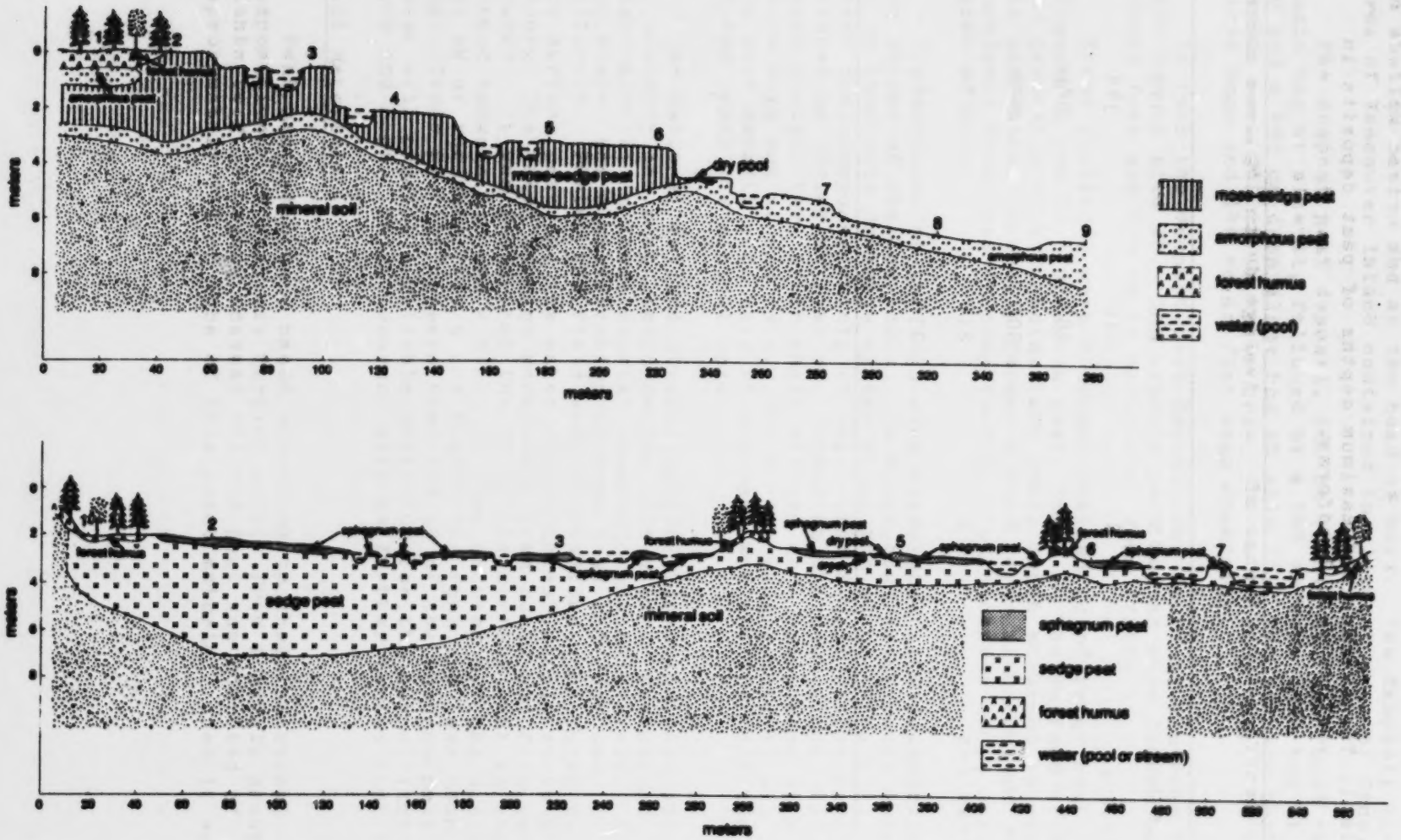
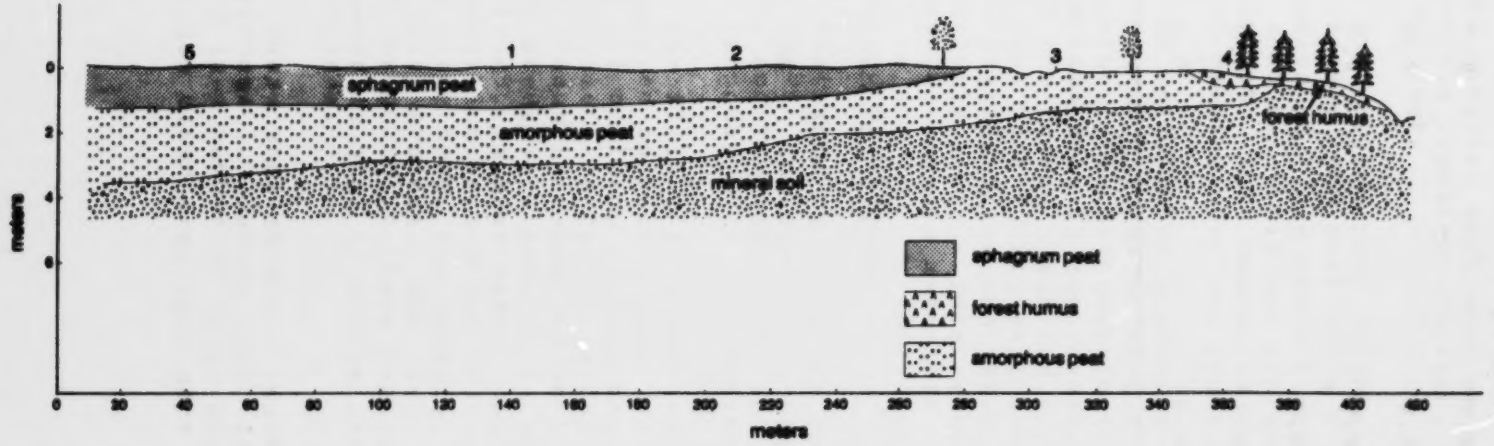


Fig. 2. Cross-section of slope bogs along the slope at site 33 (upper) and perpendicular to the slope at site 26 (lower). The sample sites are identified by their numbers (1, 2, 3, etc.) and their locations are indicated on the cross-section.



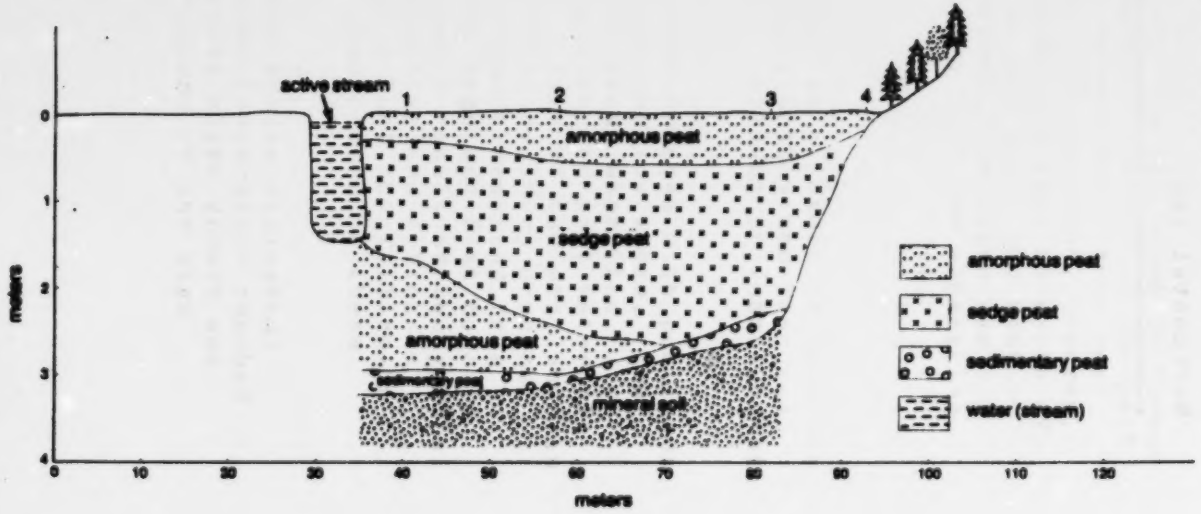


Fig. 3. Cross-section of a flat bog at site 3 and a stream fen at site 18. The sample sites are identified by their numbers (1, 2, 3, etc.) and their locations are indicated on the cross-section.

Table 2. Average pH values of surface peat and water from various peat landforms.

Peat landform	pH of surface peat	pH of water
Flat bog	4.1	4.7
Slope bog	4.0	4.6
Domed bog	4.3	4.7
Basin bog	4.3	-
Stream fen	4.7	5.2
Horizontal fen	4.9	5.6

named for that plant material (e.g. sphagnum peat). In most cases, however, other subdominant plant material(s) was present in addition to the dominant plant material. In this case the terminology was formulated to indicate the order of dominance. For example, moss-sedge peat was composed dominantly of sedge plant material with moss material being subdominant. These two materials together, however, comprised approximately 75% or more of the peat.

Most of the peat material in this study was found to be well decomposed (von Post value 6 or higher) and even some of the sphagnum peat was given a von Post value of 5 (Table 3). Many of the peat materials had a high percentage of the amorphous component. This amorphous peat was a well humified peat in which plant remains were not recognizable with a hand lens.

On areas where an upland forest ecosystem developed on former peatlands, a layer of forest humus commonly occurred on the peat deposits. The differentiation of this forest humus from peat materials was, in most cases, not easy. It was found, however, that the forest humus had a granular structure and, in spite of the fact that it was well decomposed, it had a low von Post humification value and, when it was pressed, the water was relatively clear. This seems to provide a test for separating these two organic materials.

Peatland Development

Peatlands in the study area developed as a result of both the filling in process (Dansereau et al. 1952, Zoltai and Tarnocai, 1975, and Tarnocai 1978) and the gradual build-up process (Zoltai and Tarnocai 1975 and Tarnocai 1978).

The filling-in process is generally associated with peatlands developed in basins which were originally shallow lakes. The gradual build-up process begins in moist areas where the environment is favorable for peat deposition and peat materials are gradually deposited on the terrain. Many of the peatlands in this study were associated with the gradual build-up process although, in most cases, peatland development resulted from a combination of the two processes. Slope bogs and flat bogs in the study area, for example, developed as a result of the gradual build-up process. The large number of active and filled-in shallow pools in these peatlands indicate that the filling-in process is also an active part of the development of these peatlands.

These shallow pools represent a very active biological environment. During June, 1982 the water temperature reached 25°C in a number of these pools and active algae growth and various other organisms were noted. Because of the high

Table 3. Average von Post humification values of various peat materials in different peat landforms.

Peat Materials	Von Post Humification Values					
	Flat Bog	Slope Bog	Domed Bog	Basin Bog	Stream Fen	Horizontal Fen
Sphagnum	3	3	5	5		
Amorphous-Sphagnum		9				
Sedge	8	7	6		5	4
Sphagnum-sedge	4	8				
Moss-sedge	8	6	6	5		
Amorphous-sedge			7		7	
Sedimentary-sedge		8				
Woody-sedge					5	4
Woody		6				
Moss-woody				6		
Moss	6	6		7		4
Sedge-moss		7				
Sedimentary-moss		7	8			
Amorphous	6	9		7		
Sedimentary	9	8				

rainfall, organic materials have been washed in from upslope or from adjacent but higher pools, gradually filling up the pools. New pools, however, are constantly forming although the process of formation is not well understood. New pool formation was noted on Queen Charlotte Island in association with the development of short bushy lodgepole pines. The pine foliage shaded the soil surface and retarded vegetation growth, especially of Sphagnum moss, and as a result, a depression formed under the pine which filled with water. The pine eventually died but the open shallow pool remained.

In general, most of the peatlands are associated with sedge peat or moss-sedge peat in the lower strata. This indicates that these peatlands started as fens and developed into bogs when the peat build-up reached the point at which an ombrotrophic environment developed. At this state acid tolerant plants (e.g. mosses, especially Sphagnum moss) began to develop. The shallowness of the sphagnum peat and the vigor of the Sphagnum moss growth associated with these coastal bogs indicate that growth of Sphagnum moss is not as rapid as in some of the boreal bogs or bogs on the Atlantic coast. In a number of cases it was observed that Sphagnum moss was killed in bog pools when algae or diatom colonies encroached on, and eventually covered, the entire plant.

The surface topography of the terrain had a strong influence on peat deposition. Deep deposits are usually associated with depressions and basins. This is also the case with slope bogs where deep peat is associated with local depressions and the usual steps are located where the mineral terrain is close to the surface (Figure 2).

Forest succession on bogs is a common and very little understood phenomenon. Upland forests, generally composed of cedar, hemlock, and lodgepole pine, developed on former peatlands. This is most noticeable at the edge of peatlands or in areas where the underlying mineral surface is elevated (Figures 2 and 3). This forest vegetation produces forest humus and not peat. This material is, however, very often underlain by a whitish or greyish-white layer at the contact of the forest humus and the peat. This layer has been identified as being lichen in origin. This would indicate that, when peatland vegetation reaches the lichen stage, which represents the driest stage in the peatland evolution, upland forest development sometimes takes over. Examination of all areas now covered with heavy timber underlain by peat deposits indicates that they were former peatlands. This heavy forest cover would render peatland inventories and prediction of peat deposits in these areas very difficult. Where the peatlands have invaded an upland forest, is less frequently found.

WORK PLAN FOR 1983

During the next year sampling will be carried out mainly in areas where little or no sampling was carried out this year. Special attention will be paid to peat deposits now under upland forest. Their vegetative characteristics and relationship to topographic positions as well as other related factors will be studied. Further studies will be made in order to develop criteria for separating forest humus materials from peat.

The areal extent of peatlands in the study area will be compiled and plotted on maps. This will be based largely on already available inventories. For regions where inventories are not available the areal extent of peatlands will be interpreted from aerial photographs or LANDSAT data.

The methodology for calculating peat volumes and energy values will also be developed using the areal and transect information.

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VEGETATION OF COASTAL PEATLANDS IN BRITISH COLUMBIA

C.J. SELBY

ABSTRACT

A survey of the vegetation of coastal peatlands in British Columbia was initiated in 1982. Peatland vegetation data will be classified into detailed community types as well as more broadly defined physiognomic types for use in large to intermediate scale inventories. The data collected is outlined and analytical procedures which will be used in the data analysis are briefly discussed.

INTRODUCTION

Descriptions of peatland vegetation are available for several peatlands in coastal British Columbia (Wade, 1963; Calder and Taylor, 1968; Osvald, 1933; Heusser, 1955; Turesson, 1916; Rigg and Richardson, 1938; Hebda and Biggs, 1981) but no attempt has been made to develop a classification which is applicable throughout coastal British Columbia. Furthermore, vegetation classification at the association level is often too detailed for inventory purposes and a more general classification is also not available. A study of coastal peatland vegetation was undertaken in conjunction with other studies in pacific coastal peatlands (Tarnocai, 1982; Moon and Selby, 1982). The study will include an evaluation of plant community types associated with peatlands throughout coastal British Columbia as well as a general physiognomic classification of peatland vegetation which can be used in conjunction with soil information (Moon, 1982) to produce a classification suitable for use in intermediate and small scale peatland inventory.

SUMMARY OF FIELD WORK

A reconnaissance level survey was carried out during the summer of 1982. The physiographic units of Holland (1976) were used as a first level stratification of coastal environments (Fig. 1). Sampling was conducted on the northern half of Vancouver Island within the Nahwitti Lowland, Nanaimo Lowland and Estevan Coastal Plain physiographic units, on the coastal mainland within the Hecate Lowland, and on the Queen Charlotte Islands within the Queen Charlotte Lowland, Skidegate Plateau and Queen Charlotte Mountains physiographic units. A total of 140 plant communities within 51 peatland systems were sampled.

Two levels of vegetation data were collected at each site. All physiognomically distinct vegetation components along a transect through each peatland system were sampled. For the detailed plant community classification, the cover of each species by strata was recorded. An initial species list was compiled from available literature (Figure 2) with additional species added during the field season. The species were also grouped into the following physiognomic types:

Figure 1: Physiographic stratification of coastal British Columbia according to Holland (1976)

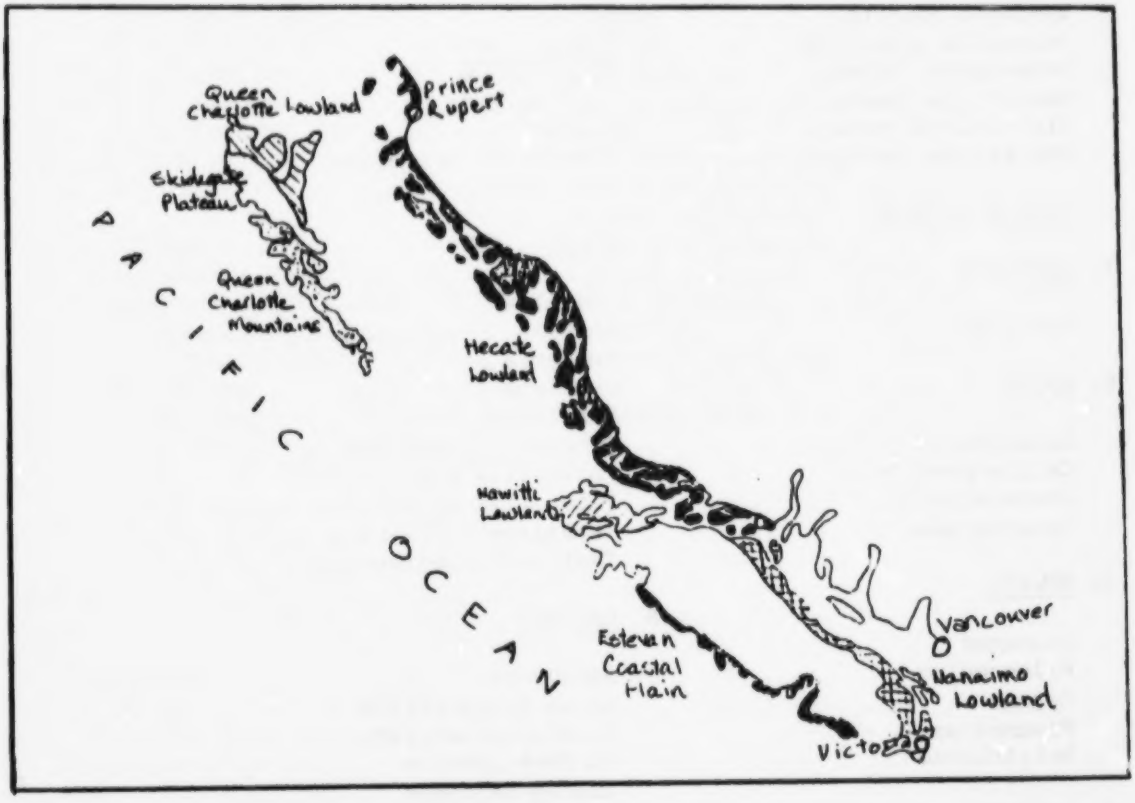

Figure 2. Species list for peatland field work.

VEGETATION DATA COMPONENT SPECIES LIST

AQUATIC

A. SUBMERGED

Ceratophyllum
Elodea
Myriophyllum
Najas
Potamogeton
Utricularia

B. FLOATING OR SURFACE

Lemna minor
Lemna trisulca
Nuphar polysepalum
Nymphaea odorata
Polygonum amphibium
Potamogeton natans
Ranunculus aquatilis
Ricciocarpus natans
Sparganium emersum

MOSS & LICHENS

A. SPHAGNUM

Spahgnum

B. BROWN

Aulacomnium
Calliergonella
Drepanocladus
Tomenthypnum

C. UPLAND

Dicranum
Hylocomnium
Hypnum
Pleurozium
Polytrichum

D. LICHENS

Cladonia

SHALLOW EMERGENTS

A. RUSHES

Cyperus
Eleocharis palustris
Eleocharis pauciflora
Rhynchospora
Triglochin maritima
Scirpus caespitosum

B. COTTON GRASS

Eriophorum chamissonis
E. polystachion

HERBS

A. FORBS - WET

Cypripidium
Darlingtonia
Drosera
Menyanthes trifolita
Lysichiton

MOIST - DRY

Achillea
Anemone
Fragaria
Gentiana
Penstemon
Potentilla anserina
Potentilla gracilis
Potentilla palustris
Taraxacum officinale
Thalictrum occidentale

B. GRASSES

Agropyron
Carex praegracilis
Distichlis stricta
Hordeum jubatum
Juncus balticus
Koeleria macrantha
Muhlenbergia richardsonis
Poa
Puccinellia
Spartina gracilis

TREES

A. CONIFEROUS

Chamaecyparis
Picea
Pinus contorta
Thuja plicata
Tsuga heterophil

B. BROADLEAF

Alnus
Salix

Figure 2 cont.

DEEP EMERGENTS

A. CATTAIL

Typha latifolia

B. BULRUSH

Scirpus lacustris

C. HORSETAIL

Equisetum hyemale
Equisetum fluviatile

EMERGENTS

A. SEDGE

Carex atherodes
C. aquatilis
C. disperma
C. lanuginosa
C. lasiocarpa
C. limosa
C. rostrata

B. GRASSES

Alopecuris aequalis
Beckmanica syzigachne
Calamagrostis canadensis
Glyceria borealis
Phragmites
Scolochloa

SHRUBS

A. TALL (1.5-5 m)

Alnus
Betula glandulosa
Salix spp.

B. LOW (.5-1.5 m)

Betula glandulosa
Chamaedaphne calyculata
Myrica gale
Salix spp.
Spiraea
Viburnum

C. DWARF (5m)

Andromeda
Arctostaphylos uva-ursi
Empetrum nigrum
Gaultheria hispidula
Kalmia microphylla
Kalmia occidentalis
Ledum groenlandicum
Linnaea borealis
Rubus pubescens
Salix spp.
Vaccinium oxycoccus
V. uliginosum
V. vitis-idaea

Class	Subclass
Aquatic	submergent
	floating
Mosses	Sphagnum
	brown
	upland
Lichens	
Deep Emergents	cattail
	bulrush
	horsetail
Emergents	sedges
	grasses
Shallow Emergents	rushes
	cottongrass
Herbs	forbs
	grasses
	sedges
Shrubs	tall (1.5-5 m)
	low (.5-1.5 m)
	dwarf (less than .5 m)
Trees	coniferous
	broadleaf

The percent cover of each physiognomic type was recorded for all plots. This data will be used to produce a general inventory classification which will be correlated with soils information collected at each site (Moon and Selby, 1982).

WORK PLAN

Identification of plants collected during the field work is partially completed. A checklist of vascular species verified to date is included in Appendix A. Names are according to Hitchcock and Cronquist (1973) and Calder and Taylor (1968). Plants collected from the Queen Charlotte Islands have not yet been verified. Identification will be completed this winter.

Upon completion of species identifications, plot data sheets will be edited and the species data will be coded for computer analysis using a tabular analysis program (Ceska and Roemer, 1971) and possibly ordination (Wildi and Orloci, 1980) to produce a classification of plant community types for pacific coastal peatlands.

The physiognomic data was coded on optical mark read cards and has been put onto the UBC computer. Analysis has not yet been done. During the next work period this data will be analysed using tabular analysis (Ceska and Roemer, 1971) and cluster analysis (Patterson, 1971). The resulting groups will be evaluated as part of a soil and vegetation relationship study (Moon and Selby, 1982) with the aim of defining a peatland classification for intermediate and small scale inventory. This classification will be evaluated during the 1983 field season. Possible application of remote sensing techniques will be explored if time permits.

An evaluation of peat samples to provide estimates of the vegetation source will also be undertaken this winter, in cooperation with Tarnocai (1982). Microscopic analysis of peat samples will be compared with field estimates of plant source to determine consistency of field estimates and to provide descriptions which might aid the field surveyor in evaluating peat source. This type of information enhances our understanding of peatland succession and may prove useful in correlating soil and vegetation data.

A literature search for pacific coastal peatlands will be completed and the results of this work will be compared with the findings of other researchers.

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Appendix A

Species collected from peatland study fieldwork on Vancouver Island, June 1982 by C.J. Selby

Agrostis aequivalis (Trin.) Trin.	alaska bent grass
Andromeda polifolia L.	bog rosemary
Apargidium boreale (Bong.) T.+G.	apargidium
=Microseris borealis (Bongard) Schultz-Bipontinus	
Calamagrostis canadensis (Michx.) Beauv.	bluejoint small reed grass
Camassia quamash (Purshe) Greene	common camas
Carex aquatilis Wahl.	water sedge
Carex canescens Bailey	grey sedge
Carex cusickii Mack.	Cusick's sedge
Carex echinata Murray	coastal stellate sedge
ssp phyllomanica (W.Boott.) Rexnicek	
Carex macrochaeta C.A. Mey	large awn sedge
Carex obnupta Bailey	slough sedge
Carex oederi Retz.	green sedge
Carex pauciflora Lightf.	few-flowered sedge
Carex paupercula Michx.	poor sedge
Carex phyllomanica W. Boott	coastal sstellate sedge
= Carex echinata Murray	
Carex pluriflora Hulten	several-flowered sedge
Carex rostrata Stokes	beaked sedge
Carex saxatilis L.	russet sedge
Carex sitchensis Prescott	sitka sedge
Coptis asplenifolia Salisb.	Spleenwort leaved goldtrhead
Dodecatheon pulchellum (Raf.) Merrill	few-flowered shootingstar
Drosera anglica Huds.	great sundew
Drosera rotundifolia L.	round-leaved sundew
Dulichium arundinaceum (L.) Britt.	diluchium
Eleocharis pauciflora (Lightf.) Link	few-flowered spike-rush
Equisetum arvense L.	common horsetail
Equisetum fluviatile L.	swamp horsetail
Eriophorum brachyantherum Trautv. + Mey	short-anthered cotton-grass
Eriophorum chamissonis C.K. Mey	chamisso's cotton-grass
Eriophorum polystachion L.	many-spiked cotton-grass
Gaultheria shallon Pursh	salal
Gentiana douglasiana Bong.	swamp gentian
Habenaria dilatata (Pursh) Hook	
= Platenthera dilatata (Pursh) Lindley ex. L.C. Beck	fragrant white fern orchid
Juncus covellei Piper	Coville's rush
Juncus drummondii E. Meyer	Drummond's rush
Juncus effusus L.	common rush
Juncus filiformis L.	thread rush
Juniperus communis L. var. montana Ait.	common juniper
Kalmia occidentalis Small	western swamp laurel
Ledum groenladicum Oeder	bog Labrador-tea

Loiseleuria procumbens (L.) Desv.	trailing azalea
Luzula campestris (L.) DC. var. multiflora (Ehrh.) Celak.	field woodrush
Lycopodium clavatum L.	stag's horn moss
Lycopodium inundatum L.	bog clubmoss
Menyanthes trifoliata L.	buckbean
Menziesia feruginea Smith	rusty pacific menziesia
Myosotis laxa Lehm.	small-flowered forget-me-not
Myrica gale L.	sweet gale
Myriophyllum exalbescens Fern. = Myriophyllum spicatum L. var. exalbescens (Fern.) Jeps.	northern spiked water-milfoil
Nephrophyllidium crista-galli (Menzies) Gilg.	deer-cabbage
Pinguicula vulgaris L.	common bladderwort
Plantago maritima L.	seaside plantain
Poa pratensis L.	kentucky blue grass
Potamogeton pectinatus L.	fennel-leaved pondweed
Potentilla anserina L.	common silverweed
Rubus chamaemorus L.	cloudberry
Rubus pedatus	five-leaved creeping raspberry
Salix spp.	willow
Scheuchzeria palustris L.	scheuchzeria
Scirpus americanus Pers. = Scirpus pungens M.H. Vahl	three-square bulrush
Scripus validus Vahl	softstem bulrush; tule
Selaginella selaginoides (L.) Link	mountain moss
Spiraea douglasii Hook.	Douglas' spiraea
Tofieldia glutinosa (Michx.) Pers.	tofieldia
Trifolium L. spp.	clover
Triglochin maritimum L.	seaside arrowgrass
Vaccinium membraneceum Dougl.	black blueberry
Vaccinium ovatum Pursh	evergreen blueberry
Vaccinium oxycoccus L.	bog cranberry
Vaccinium uligonosum L.	bog blueberry
Veronica scutellata L.	marsh skullcap

PEATLAND SOILS AND SOIL SYSTEMS OF COASTAL BRITISH COLUMBIA

D.E. MOON

ABSTRACT

A project was initiated to develop peatland soil classes for use in large to intermediate scale inventories. The field verifiable morphological properties on which the classification is to be based are defined and procedures to be used in data analysis are outlined.

INTRODUCTION

The primary objective of this project is to characterize and define peatlands soil classes and peatland soil systems for use in large to intermediate scale peatland inventory of Pacific coastal British Columbia. The results will be used as input to a concurrent study of soil-vegetation relationships (Moon and Selby, 1982) and will use the results of concurrent detailed peatland transect study (Tarnocai, 1982) as a partial test of the classes proposed.

The classes being developed are for use in an inventory program, they should therefore be efficiently and objectively field verifiable and efficiently and easily sampled. Existing techniques (including field and laboratory) used to identify organic materials are frequently inconsistent or contradictory (Levesque et al, 1980). The aim of this project is to define consistently field verifiable classes and then to determine the range of properties associated with each class. To satisfy these needs an attempt will be made to establish classes based entirely on field-verifiable properties of samples extracted with a Mini-mized Macaulay sampler.

PROGRESS REPORT

Data forms were designed to record data in an optical mark read compatable format (Moon and Selby, 1982). This was done to eliminate the problem of key punching and to allow coding of data in computer readable format in the field office. Data was recorded for peatland systems and the surrounding uplands as well as for the specific vegetation and soil areas which make up the peatland system.

SOIL COMPONENT DATA

For each soil area, the surface slope, the pH of the surface soil layer, and the maximum and minimum depths of organic material were recorded. In addition, for each soil, a complete horizon or layer sequences was described. For each horizon or layer (C.S.S.C. 1978) the following information was recorded.

Materials: The composition of each layer or horizon is described by the proportion of each of the following components which are found in the layer or horizon: Sphagnum moss; brown moss; feather moss; forest litter; wood; sedges; roots; unidentifiable fiber; sedimentary organic materials; and amorphous organic materials.

Decomposition: The von Post scale of decomposition was recorded for all horizons, in addition the properties of exuded water, structure, escape, and form, used to estimate the von Post scale were recorded independently during the second stage of field work (Table 1).

Thickness: The depth to the bottom of each horizon or layer was recorded.

Texture: The texture of mineral layers and the basal mineral deposit was recorded.

SAMPLING PROCEDURE

The project was conducted concurrently with a transect study to construct cross-sectional profiles of peatland systems (Tarnocai, 1982). Initial system choice was based on criteria for the transect study. This system was characterized so that physical and chemical properties of the samples taken on the transect study could be incorporated into the analysis of horizons and layers. Additional systems were sampled on a helicopter transect from the initial system. Eight coastal physiographic regions (Holland 1976) were sampled. For each system a number of upland characteristics were recorded (Moon and Selby 1982). Within each distinct physiognomic vegetation component (Selby, 1982) the maximum and minimum organic soil depth was recorded and an arbitrary location (somewhere within the central two thirds of the component) was chosen for the profile description. The sampling design and procedure was not statistically rigorous and can serve only to formulate provisional classes to be tested. A total of 51 systems, 140 components, and 384 horizons were sampled. The soil data has been entered into the computer but has not as yet been analysed.

This years field work will serve two functions. It will provide a reconnaisance of the coastal peatland area and it will provide the basis for classes to be used as a stratification in future sampling. In the interest of insuring an adequate number of samples on which to form provisional classes only field verifiable data were collected and as many systems as possible were sampled. At this stage an attempt was made to sample the complete range of systems encountered in the study area.

A detailed multivariate analysis of the data including factor analysis and cluster analysis will be used in formulating soil horizon or layer classes. These classes will then be subjected to multiple discriminant analysis and univariate analysis to test for consistency within the data set. Following definition of the soil layers, soils will be defined on the basis of the presence and sequence of the defined layers. The definition of peatland soil systems will be based on the presence and pattern of soil classes found within the peatland perimeter.

It must be emphasized that the classes used will have no statistical validity except for attributes which were not used in the classification procedure. The results of laboratory sample analysis by Tarnocai, 1982 and additional samples to be taken in 1983 will provide an estimate of class

properties and can provide a legitimate test of the usefulness of the classes since the laboratory-determined properties will not be used in formulating the classes. A test of how well the proposed classes represent the total peatland population will require a statistically defensible sampling design and is beyond the scope of this project.

Table 1. Von Post scale of decomposition.

Water:

1. clear to slightly discoloured non-turbid
2. discoloured some debris, non-turbid
3. moderately turbid
4. strongly turbid
5. small volume of strongly turbid water
6. strongly turbid water wets finger but does not fall from hand
7. no water escapes

Structure:

1. living material
2. structure and form complete
3. mixture of intact plants, broken stems, and components
4. few intact plants, components are intact
5. up to 1/4 of components no longer intact
6. 1/4 to 1/2 of components no longer intact
7. greater than 3/4 of components no longer intact
8. only resistent fibres or roots are distinguishable
9. no observable structure, incoherent
10. coherent or gelatinous, no observable structure

Escape:

1. no material escapes
2. less than 1/4 of material escapes
3. 1/4 to 1/2 material escapes
4. 1/2 to 3/4 material escapes
5. greater than 3/4 of material escapes
6. all material escapes

Form:

1. no cast
2. only vague handshape
3. definite handshape, rounded imprint
4. definite handshape, sharp ridges

Von Post

1. Living material
2. Structure and form complete, clear to slightly yellow water, little shape
3. Structure fragmented but not decomposed, yellow water some debris, vague to definite handshape
4. Structure disintegrating but distinguishable, light brown to brown water, distinct handprint
5. Structure becoming amorphous, plant components disintegrating, brown suspension, some material escapes

Table 1. continued

6. Nearly half sample amorphous, constituents distinguishable, brown to dark brown suspension, greater than 1/3 of material escapes.
7. Only very vague structure which disappears on working, yields only small amounts of water, very dark suspension, greater than 1/2 of material escapes.
8. Only distinguishable remains are resistent roots and fibres, no wood little or no water, greater than 2/3 of material escapes.
9. Completely amorphous, no water, nearly all sample escapes
10. Gelatinous, all sample escapes

Test Procedure:

1. very gentle squeeze to examine water
2. examine structure of material
3. remove most of the free water with a very gently squeeze then firm pressure to evaluate form and escape.

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SOIL AND VEGETATION RELATIONSHIPS OF PACIFIC COASTAL PEATLANDS

D.E. MOON AND C.J. SELBY

ABSTRACT

A project was initiated to develop a peatland classification. The system concept presented in Moon and Selby (1982) is applied to coastal peatlands. Data forms and definitions for data collected are presented along with a brief discussion of analytical procedures to be used.

INTRODUCTION

The primary objective of this project is to explore peatland soil and vegetation relationships which may be useful in defining a peatland classification for intermediate and small scale inventories. Classes to be used at these scales of inventory should have the following characteristics. They should take advantage of available remote sensing data, they should be amenable to efficient testing and verification, and they should provide a stratification for use in sampling which significantly reduces the range of properties within classes from that which would be found without stratification. This project will use the results of three studies being conducted concurrently: Peatland soils and soil systems of coastal British Columbia (Moon, 1982); Vegetation of coastal peatlands in British Columbia (Selby, 1982); and Peatlands of the Pacific coast (Tarnocai, 1982).

PROGRESS REPORT

Data forms were designed to record data in an optical mark read compatable format (figure 1). This was done to eliminate the need for keypunching and to allow the data to be recorded in computer readable form while still in the field office. Data was recorded on characteristics of the peatland system (the area encompassed by the peatland perimeter), characteristics of the surrounding upland, characteristics of all vegetation components (distinct physiognomic types), and characteristics of the soils associated with each vegetation component. Data entries and number codes are presented in Table 1.

PEATLAND SYSTEM DATA

Physiographic region: The study area was divided into eight regions based on the Physiographic regions of Holland (1976). The eight regions are: The Vancouver Island Mountains; the Georgia Depression; the Nahwitti Lowland; the Hecate Lowland; the Queen Charlotte Lowland; the Skidegate Plateau; the Queen Charlotte Mountains; and the Estevan Coastal Plain (figure 2).

Water: Water bodies were classified as flowing or still and the average width recorded. In addition the distribution of water bodies on the peatland system was recorded. Distribution classes used were: a single occurrence; few sporadic occurrences; several sporadic occurrences; uniform distribution of water bodies over the peatland with water bodies occupying less than 50% of the area; uniform distribution of water bodies over the area with water bodies

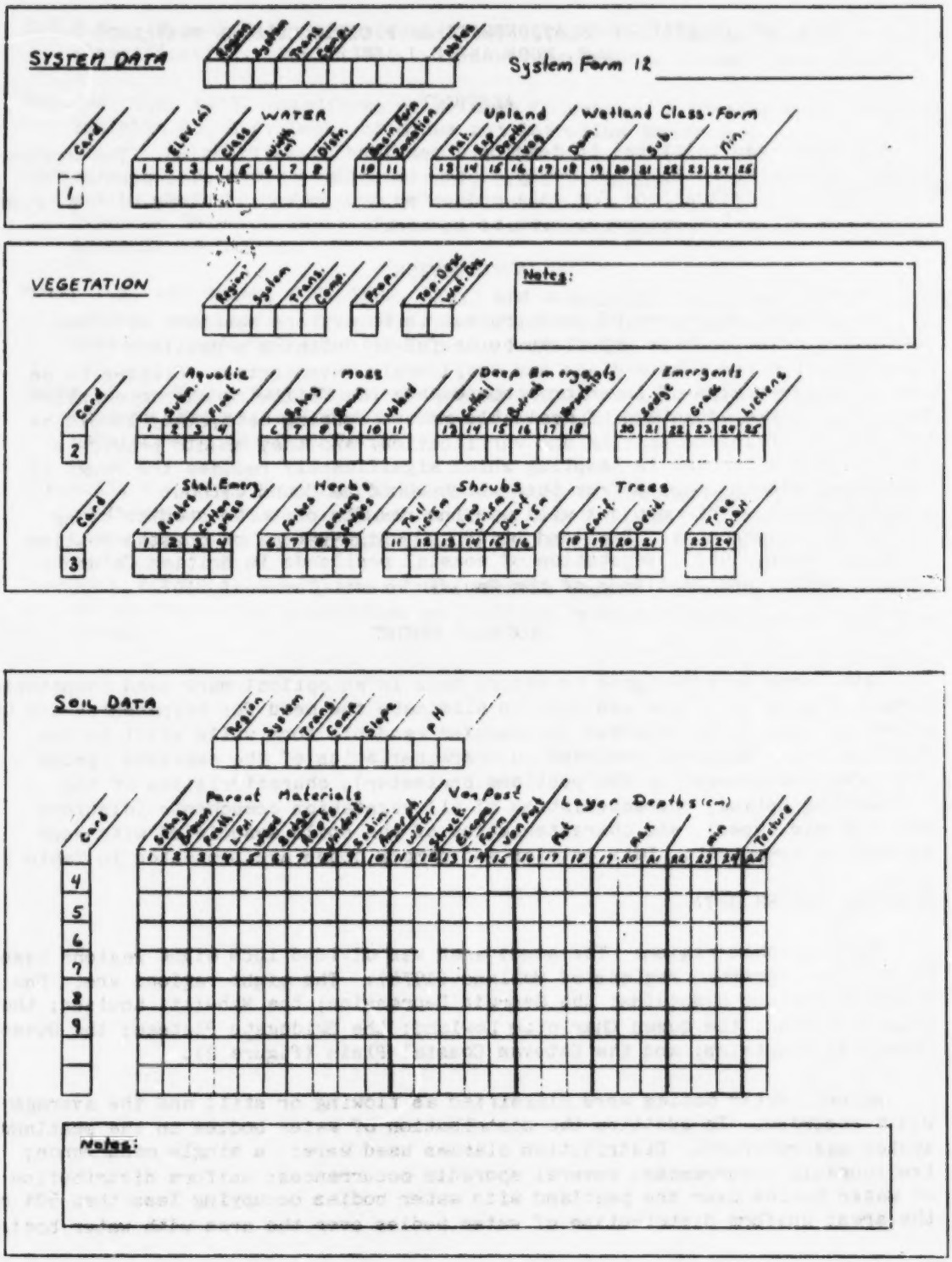


Figure 1: Peatland System, Vegetation, and Soil Data Forms

Table 1. Peatland systems data coding conventions.

Physiographic Region

1. Van. Isle Mountains
2. Georgia Depression
3. Nahwitti Lowland
4. Hecate Lowland
5. Q.C. Lowland
6. Skidegate Plateau
7. Q.C. Mountains
8. Estevan Coastal Plain

Notes

1. Site
2. Vegetation
3. Soil
4. Site & Veg
5. Site & Soil
6. Veg & Soil

Water

Class
1. Flowing
2. Still

Distribution
1. Single
2. few sporadic
3. several sporadic
4. uniform H_2O Veg
5. variable H_2O Veg
6. variable H_2O Veg
7. variable H_2O Veg

Basin Form

1. Seepage track
2. Open basin
3. Closed basin
4. Sloping
6. Level

Peatland Surface

1. depression
2. floating
3. supersaturated
4. level
5. hummock
6. ridge
7. dome
8. plateau

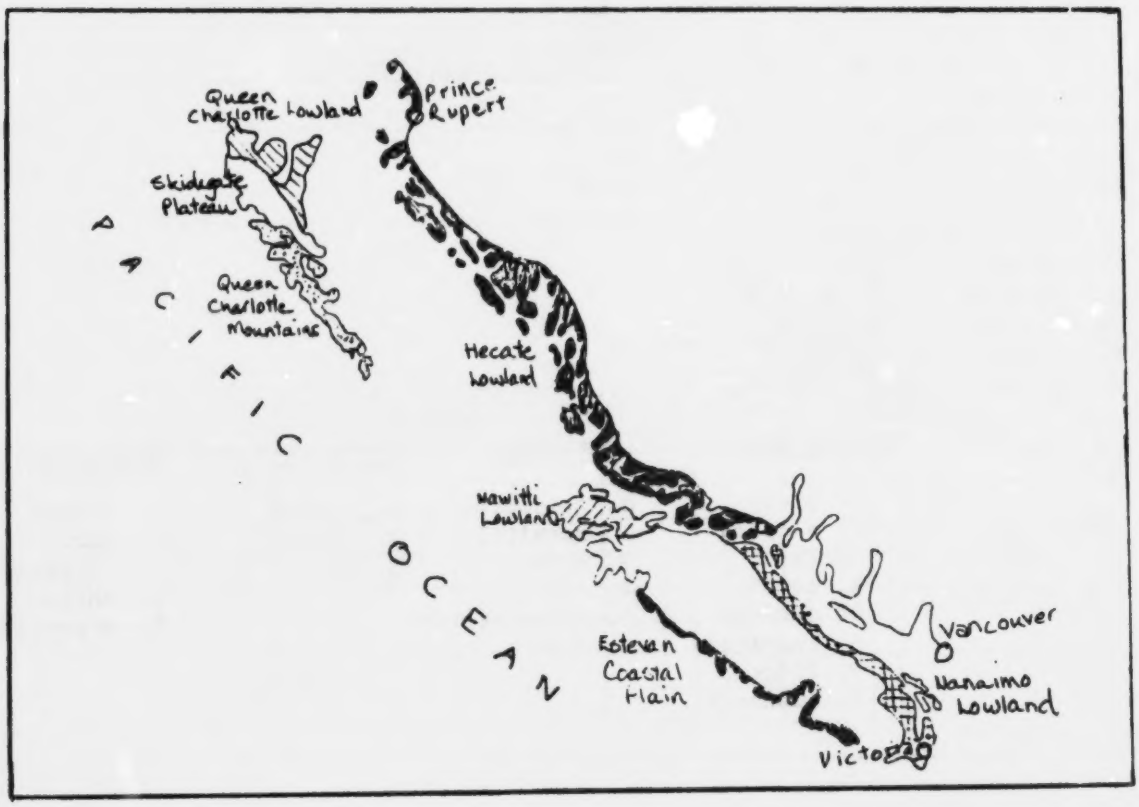
Zonation

1. Concentric
2. banded
3. islanded
4. marginal
5. interspersed
6. patterned

Uplands

Surf Exp.	Material	Depth to Rock	Vegetation
1. steep	1. colluvial	1. veneer	1. forest
2. sloping	2. morainal	2. blanket	2. scrub forest
3. fan	3. eolion	3. mantle	3. shrub
4. level	4. fluvial		4. grassland
5. subdued	5. lacustrine		
6. terraced	6. rock		
7. ridged			
8. hummocky			

Figure 2: Physiographic stratification of coastal British Columbia according to Holland (1976)



occupying greater than 50% of the area; variable distribution of water bodies with water occupying less than 50% of the area; and variable distribution of water bodies occupying greater than 50% of the area.

Basin Form: Five basin forms were used in classifying systems: seepage tracks; open basins (having a drainage outlet); closed drains (no drainage outlet); sloping areas, and level areas.

Zonation: Six classes were used to described vegetation patterns: Concentric; banded; islanded; marginal; interspersed; and patterned (Moon and Selby, 1982).

Uplands: The surface expressions or morphology of the surrounding upland was described as steep, sloping, fan, level, subdued, terraced, ridged, or hummocky. Materials were described as colluvial, morainal, eolian, fluvial, lacustrine, or rock and the depth of deposit is described as a veneer, blanket or mantle (Resource Analysis Branch, 1978). The surrounding upland vegetation was described as dominantly forest, scrub forest, shrub, or grassland.

Peatland Class: The dominant, subdominant and minor wetland forms (from the national wetland registry) which made up the peatland system were recorded (Tarnocai, 1980). Table 1 presents the classes and numeric value codes used.

VEGETATION COMPONENT DATA

Cover values for physiognomic classes and complete species lists were recorded for each component (Selby, 1982). The classes and subclasses are listed below. The percentage of the plot covered by each class is recorded.
Aquatic - submergent, floating
Mosses - sphagnum, brown, upland
Deep Emergents - cattail, bulrush, horsetail
Emergents - sedges, grasses
Lichens
Shallow Emergents - rushes, cottongrass
Herbs - forbs, non-emergent grasses and sedges
Shrubs - greater than 1.5 m, .5-1.5 m, less than .5 m
Trees - coniferous, deciduous

SOIL COMPONENT DATA

The slope, surface layer pH, and maximum and minimum organic depth were recorded for each vegetation component. In addition a soil core was taken and details of material composition, decomposition and thickness were recorded for each soil horizon or layer. Material composition is indicated by deciles indicating the proportion of the horizons made up by each material listed. Decomposition is recorded following Moon (1982).

Sampling design and sampling strategies are discussed in Moon (1982). A total of 51 systems and 140 components were sampled. Of these 31 had soil samples taken for physical and chemical analysis (Tarnocai, 1982). The data has not yet been analysed.

This years field work is intended to provide a reconnaissance of coastal peatland systems and to provide a data base from which to form provisional peatland system classes. Following definition of the soil and vegetation component and system classes a number of approaches will be used in an attempt to define predictive relationships that will allow the classification of soil systems or prediction of soil properties without ground access (Selby and Moon, 1981). Soil component and system classes will be correlated with vegetation component and system classes. The use of surrounding upland characteristics, peatland system characteristics, and vegetation characteristics as predictors of the soil classes will be explored.

In addition a classification based on surrounding upland characteristics, peatland system data, and vegetation systems will be produced. The range of specific soil properties associated with the classes formed will be documented. A number of classification strategies will be attempted but all must be based on characteristics which can be reliably estimated without ground access. The classification which carries the most useful information on soil properties will be chosen as the stratification for future invertories and an inventory procedure will be proposed.

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PEATLANDS OF THE ONTARIO ST. LAWRENCE LOWLANDS

ALLEN EAGLE

SUMMARY

During 1982 an overall broad coverage survey of the study region was completed in order to assess the range of peatland types, identify the most common peatland types located in the Ontario portion of the St. Lawrence Lowlands, and to develop an inventory methodology. Three main peatland types were identified, hardwood and hardwood-coniferous basin swamps, low shrub-moss basin bogs, and shore and stream marshes. Hardwood basin swamps were the dominant peatland type identified. During the survey, 24 transects (Table 1) were traversed on 16 separate deposits (Figure 1). This included the collection of 264 peat samples for physical and chemical analysis, 41 C^{14} samples, 31 water samples and 150 plant specimens used for establishing vegetation species lists.

INTRODUCTION

The following report represents an interim progress report detailing the activities and findings of the Ontario portion of the St. Lawrence Lowlands peatland research studies.

The objective of the study is to characterize the various peatland types on the basis of peat type, peat properties (physical and chemical), the morphology and stratigraphy of the various peat types, surface vegetation and water chemistry. Arising out of the work will be the development of an inventory methodology for peatlands. The analytical results will be used to determine the amount and quality of the peat resource within this region. C^{14} analysis will be used to determine the dynamics and rate of peat accumulation.

The Current State

Various researchers have published literature on Ontario peatlands and the list of references is quite extensive and spans many years. However, most of the literature relates to various scientific applications and has no information pertaining to peat type or to the quantity of the resource.

The most comprehensive reports to date dealing with the current state of peatland inventory in Ontario have been those completed by Monenco Ltd. (1981), and Dendron Resource Surveys Ltd. (1982). In both cases, no fieldwork was involved in the preparation of the reports. The material has been gleaned from available published sources or from consultation with numerous individuals from a variety of specialities and agencies.

Monenco prepared a preliminary peatland survey map (1:1,000,000) using existing NTS and Geological Terrain maps, information from literature, and airphoto spotchecks to assess the current inventory state of Ontario peatlands. Due to the small scale it was necessary to generalize information. Overall, the general patterns remain and definite trends can be identified. The province was arbitrarily divided into four regions and the peat resources estimated in terms of area and volumes. Estimates were also made of the portion of fuel peat and moss peat. In their southern Lowlands regions, which corresponds closely to the area of this present peatland study, Monenco calculated the potential useable area as 284,000 ha, with an average depth of 2.7 m. This translates to a total peat resource of $7.7 \times 10^9 m^3$ or $3.08 \times 10^9 m^3$ of moss peat and $4.62 \times 10^9 m^3$ of fuel peat based largely on known ratios of moss to fuel peat in Europe and New Brunswick.

The acccuracy of these results is largely unknown, but, on the basis of this years field work, are suspected of being high in terms of the total area, total volume, and in the proportion of moss peat.

The most recent review of Ontario peatland inventory data was completed by Dendron Resource Surveys Ltd. (1982), under contract to the Department of Agriculture. The report provides a list of contacts and includes a map illustration of inventory coverage. Presently only preliminary first level peatland surveys have been completed within the Ontario portion of the St. Lawrence Lowlands.

The Ontario Ministry of Natural Resources has awarded contracts for peatland surveys in the Pembroke and Peterborough regions. The information evolving out of these projects include the mapping of all peatlands, classification by major physiognomic types, and detailed sampling (100 m interval grid lines) for some peatlands.

Inventory Methodology

The peatland inventory techniques used in this peatland studyd have been adopted from Tarnocai (1982, in press). The inventory methodology is based on the use of peat landform. The survey began with a literature review followed by map and aerial photo interpretation, followed by field data collection. The methods of sampling and the types of analytical data to be generated are discussed.

Preparation

Existing 1:250,000 and 1:50,000 National Topographic Series maps in combination with black and white panchromatic aerial photographs were used to scan the study area and to locate and

select a representative number of sites. The sites were distributed throughout the region in such a manner as to provide a broad overall scan. Aerial photographs (various scales) were used in the initial planning and in determining access and locating positions in the field. Transects were prelocated on the selected peatlands (Table 1) based on observed drainage and vegetation patterns, peat landform together with the possibility of access. In a few cases, two or more transects were located within a deposit out of the need to gain some preliminary idea as to the variability of peat depth, and the stratigraphy of peat types within specific deposits.

Sampling Methods

All the field data were collected along transects and were recorded using the Canadian Wetland Registry forms (Tarnocai, 1980). The sample points along the transects were located according to changes in peat landform or changes in vegetation. When the peat landform and vegetation appeared uniform throughout, sample points were located in a more or less regular interval (approximately 300 m) fashion.

At each sampling site a Mini-mized Macaulay peat auger was used to retrieve a complete core, from the top of the peat down to and including the underlying mineral, in 50 cm increments. The core was characterized into horizons or peat types on the basis of botanical composition and degree of humification (von Post scale, 1 to 10). For each of the layers identified: the colour, pH, wood content, structure, consistency, the amount and size of roots, and the rubbed fiber was estimated. The peat landform, type of drainage, and the site vegetation was described. A sample of each layer identified was collected to be analyzed and characterized physically and chemically. Whenever possible bulk density samples were collected. At selected sites, samples of the basal peat layer were collected for C^{14} analyses. Water samples were collected at a selection of sites.

From the information collected along the transects cross-sectional schematic diagrams (Figure 2 to 10) were compiled indicating surface landforms, vegetation, sample site locations, together with the stratigraphy and morphology of the various peat types, including the type of underlying mineral material.

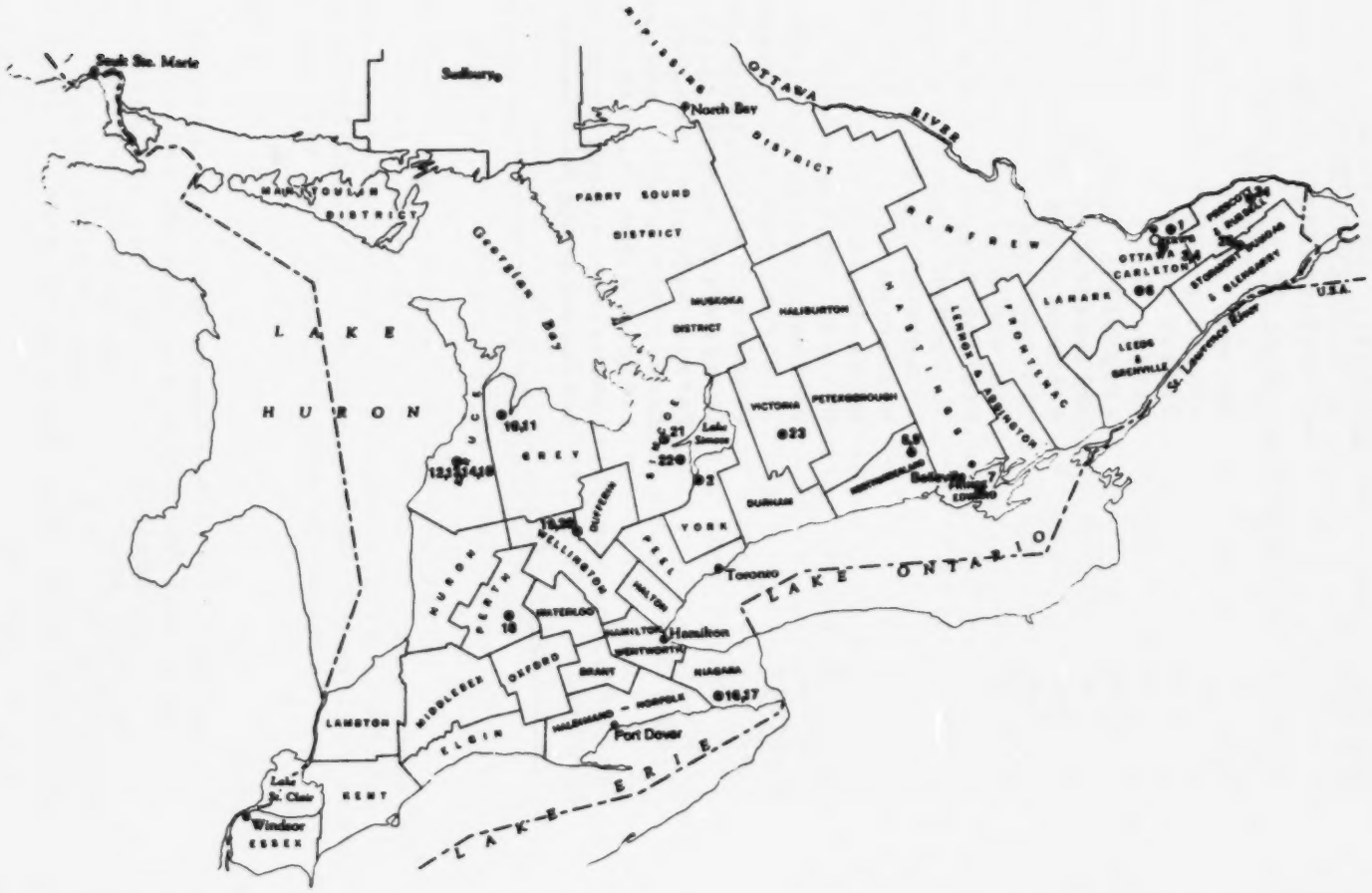
Laboratory Analysis

All the peat samples, with the exception of C^{14} samples have been submitted to the Service Laboratory of the Land Resource Research Institute for physical and chemical characterization. The forthcoming analytical data include unrubbed and rubbed fiber content, per cent ash, per cent organic carbon, pH, bulk density (when taken), per cent total nitrogen,

Table 1. List of 1982 Transects.

Transect No.	Map (1:50,000)	Location N.T.S. (Longitude(W)	Latitude(N))
82-05-01	Russel 31G/G	75°27'	45°24'
82-05-02	Alliston 31D/4	44°12'	79°31'
82-05-03	Ottawa 31G/5	76°37'	45°18'
82-05-04	Ottawa 31G/5	76°38'	45°18'
82-05-06	Kemptville 31G/4	75°47'	45°03'
82-05-07	Belleville 31C/3	77°14'	44°02'
82-05-08	Trenton 31C/4	77°46'	44°13'
82-05-09	Trenton 31C/4	77°45'	44°12'
82-05-10	Wiarton 41A/11	81°02'	44°33'
82-05-11	Wiarton 41A/11	81°01'	44°35'
82-05-12	Walkerton 41A/3	81°20'	44°03'
82-05-13	Walkerton 41A/3	81°22'	44°03'
82-05-14	Walkerton 41A/3	81°22'	44°08'
82-05-15	Walkerton 41A/3	81°25'	44°04'
82-05-16	Welland 30L/14	79°19'	42°55'
82-05-17	Welland 30L/14	79°17'	42°55'
82-05-18	Stratford 40P/7	80°57'	43°28'
82-05-19	Orangeville 40P/16	80°24'	43°54'
82-05-20	Orangeville 40P/16	80°23'	43°54'
82-05-21	Barrie 31D/5	79°52'	44°23'
82-05-22	Barrie 31D/5	79°38'	44°17'
82-05-23	Lindsay 31D/7	78°49'	44°28'
82-05-24	Hawkesbury 31G/10	74°49'	45°31'
82-05-25	Alexandria 31G/7	75°00'	45°18'

FIGURE 1: Location of 1982 Transects - ie Transect 82-05-01 = >1



exchangeable cations (Al, Ca, Mg, K), cation exchange capacity, and calorific values. The methodologies are as specified in the publications of the Canada Soil Survey Committee (1978) and the Subcommittee Methods of Analysis (1978).

DISCUSSION

Within the study region, three main peatland types were identified with several other minor peatland types or variations of types observed.

The dominant characteristic peatlands are the hardwood (and hardwood-coniferous) basin swamps, located in topographically defined basins (Figure 2,3), shallow depressions (Figure 4,5), or in shallow depressions along stream channels (Figure 6,7). The peat in these swamps is composed of a well decomposed (humified) woody peat (von Post H7) which may or may not be underlain by moderately decomposed sedge peat (von Post H5 and H6) or moss peat (von Post H4 and H5) figure 6. A layer(s) of woody basal peat, sedimentary peat or marl may be present. The maximum peat thickness is generally about 3 meters, although this depth decreases toward the margins of the peatlands. Unless drained these swamps usually maintain water levels at or above the surface of the peat. The pH of the peat materials usually ranges from 6.5 near the top of the deposit to 7.4 at the peat-mineral contact. The mineral layer is usually a marine clay or clay loam.

Low-shrub basin bogs (may have some coniferous and/or hardwood cover) located in defined basins, channels and shallow depressions are less abandant than basin swamps, but are geographically widely distributed. Bogs (Figures 8 to 10) characteristically possess a moss surface layer (von Post H1 to H4) underlain by moderately decomposed sedge peat or woody sedge peat (von Post H4 to H6). The sedge peat may or may not be underlain by a well humified basal woody peat (Figure 8) and/or marl (Figure 10). Sedimentary peat may also be present (Figure 9). The thickness of the peat varies from approximately 2.5 m to 5.5 meters. The pH ranges from 3.6 near the surface to 5.8 near the bottom of the peat. The underlying mineral is usually marine clay and the water levels are generally at or near the peat surface.

The third main peatland type identified are marshes, located along lake shores and drainageways. The water levels within marshes is characteristically well above the peat surface. As a result of high water levels and the September and October water temperature no true marshes were sampled. Through references in the literature it is believed that the accumulation of peat is minimal (1 meter or less) and that the pH ranges from circumneutral to slightly alkaline (Monenco 1981).

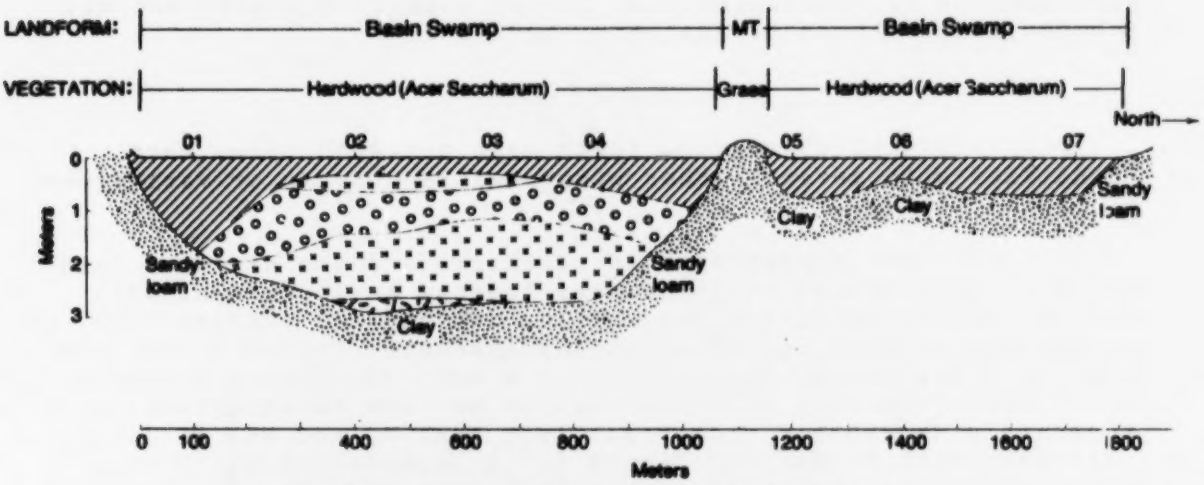


FIGURE 2: Transect 82-05-07, Location 44°02'N 77°14'W, Cross-section of a Hardwood Basin Swamp.

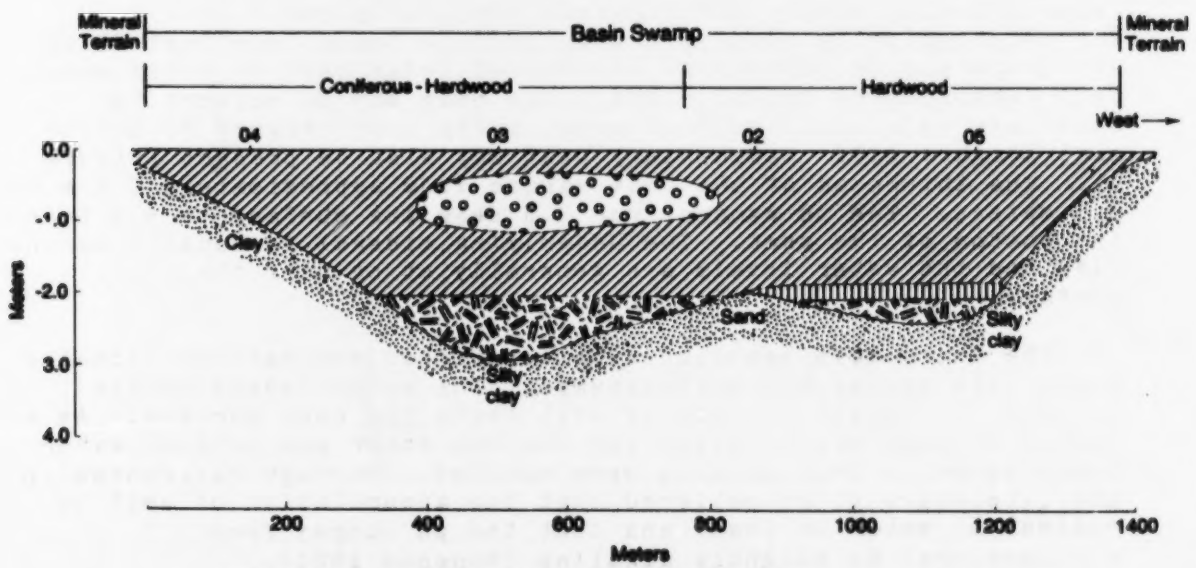


FIGURE 3: Transect 82-05-10, Location 44°33'N 81°02'W Cross-section of peat within a Basin Swamp.

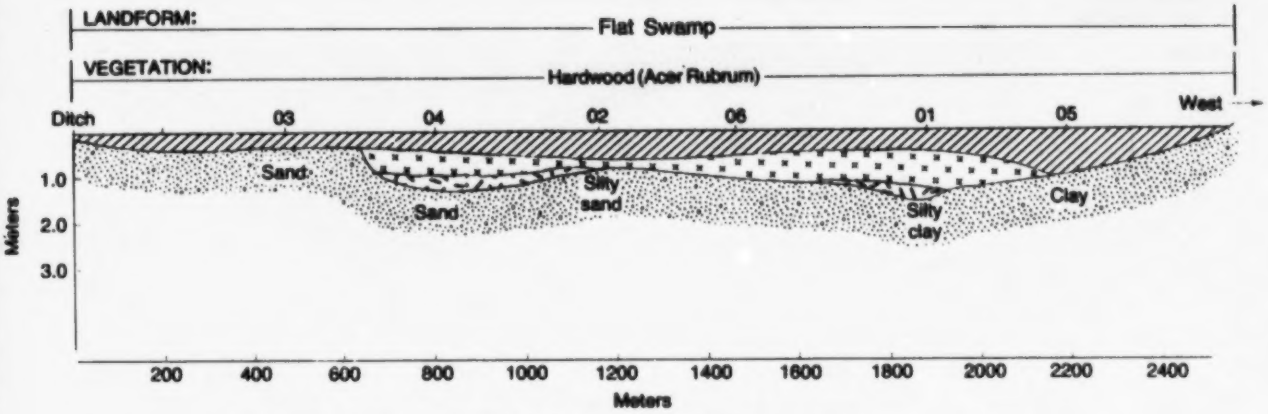
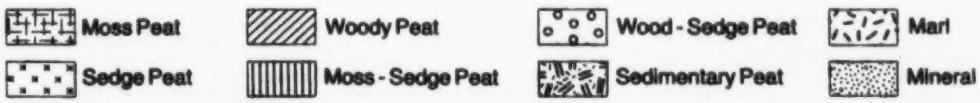


FIGURE 4: Transect 82-05-14, Location 44°08'N 81°22'W, 11°S.
Cross-section through a Hardwood Flat Swamp.



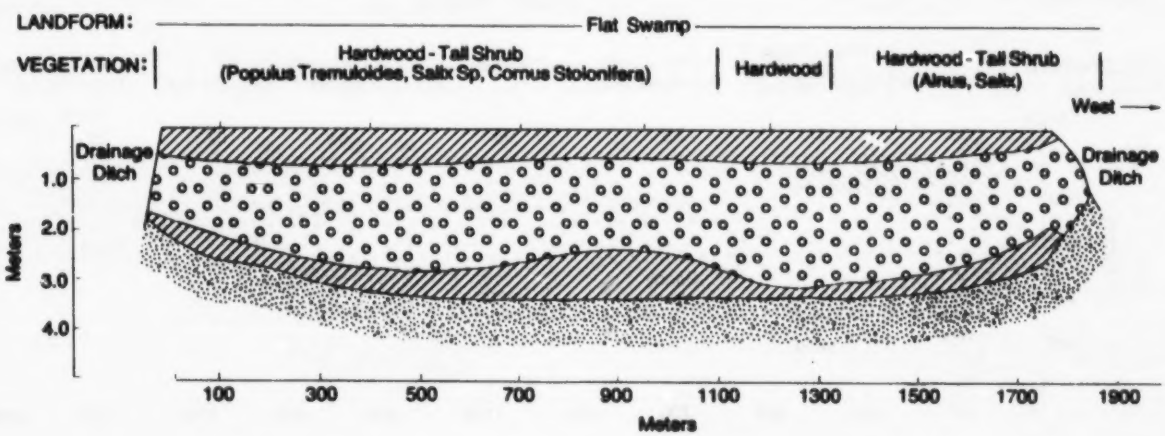


FIGURE 5: Transect 82-05-25, Location 45°18'N 75°00'W, Bear
Cross-section through a Flat Swamp.

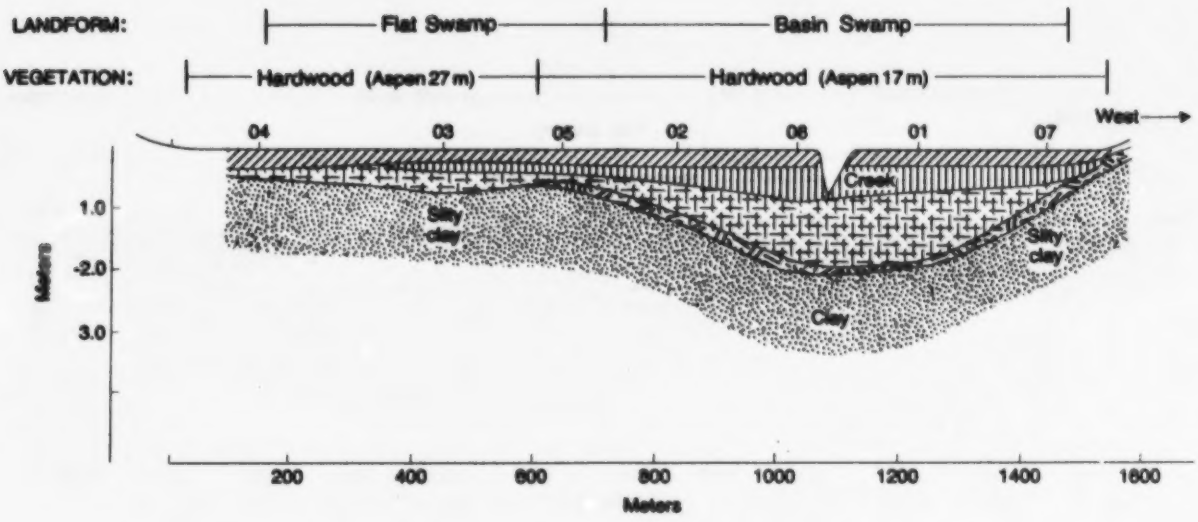
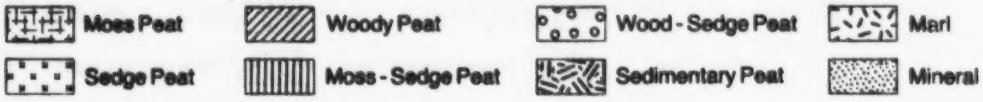


FIGURE 6: Transect 82-05-18, Location 43°28'N 80°57'W, ,1°N.
Cross-section Hardwood Basin Swamp.



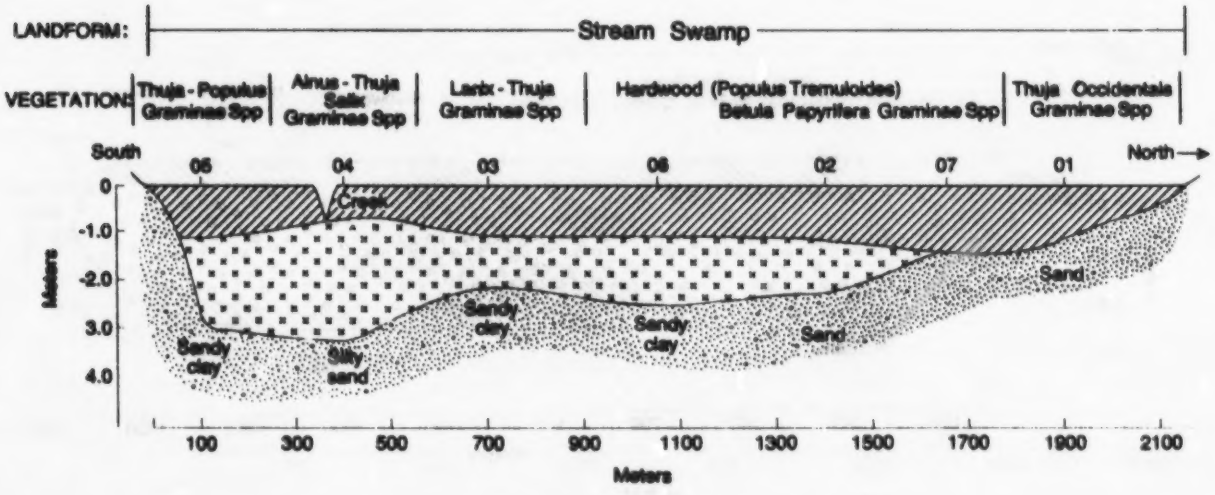


FIGURE 7: Transect 82-05-23, Location 44°28'N 78°49'W,
Cross-section through a Stream Swamp.

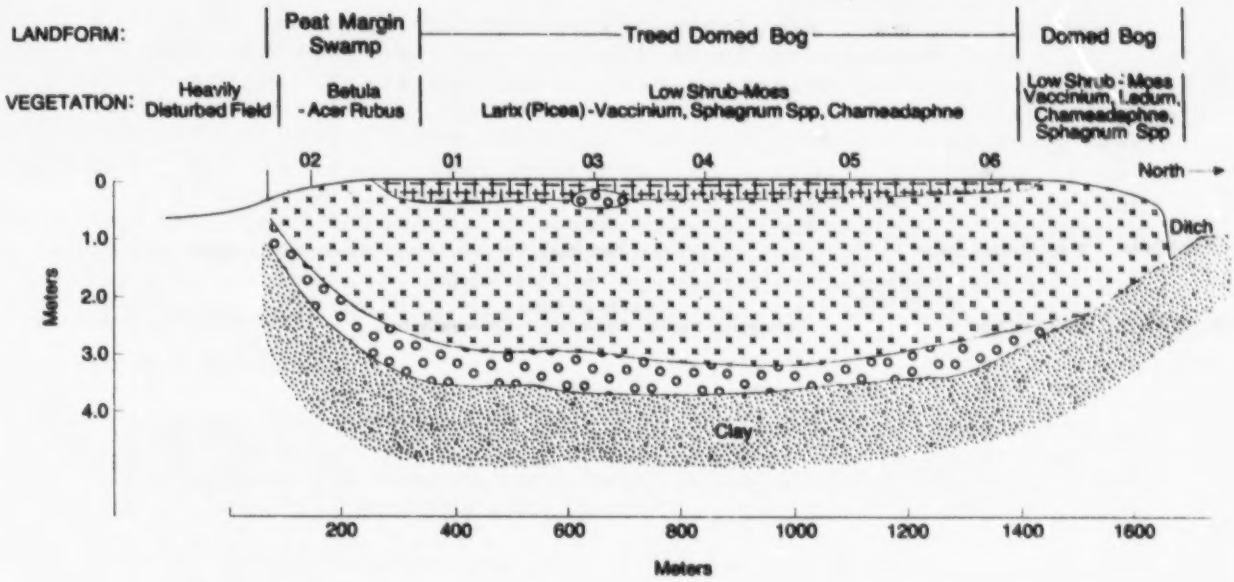


FIGURE 8: Transect 82-05-24, Location 45°31'N 74°49'E,
Cross-section through a Treed Domed Bog.

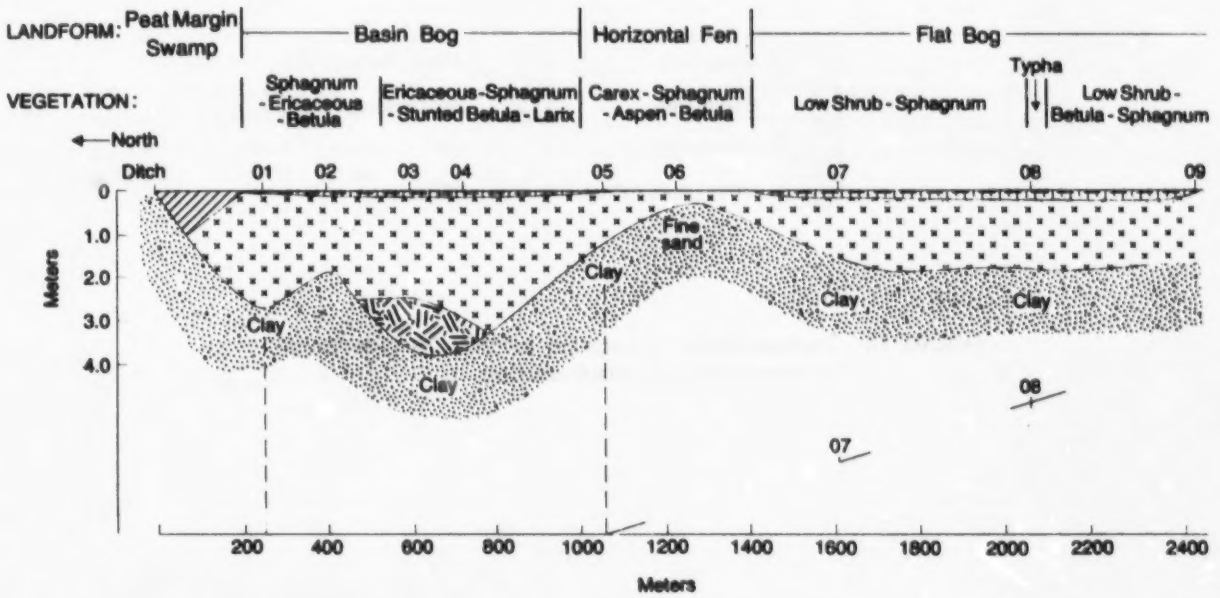


FIGURE 9: Transect 82-05-01, Location 45°24'N 75°27'W.
Cross-section of a Basin Bog - Flat Bog.

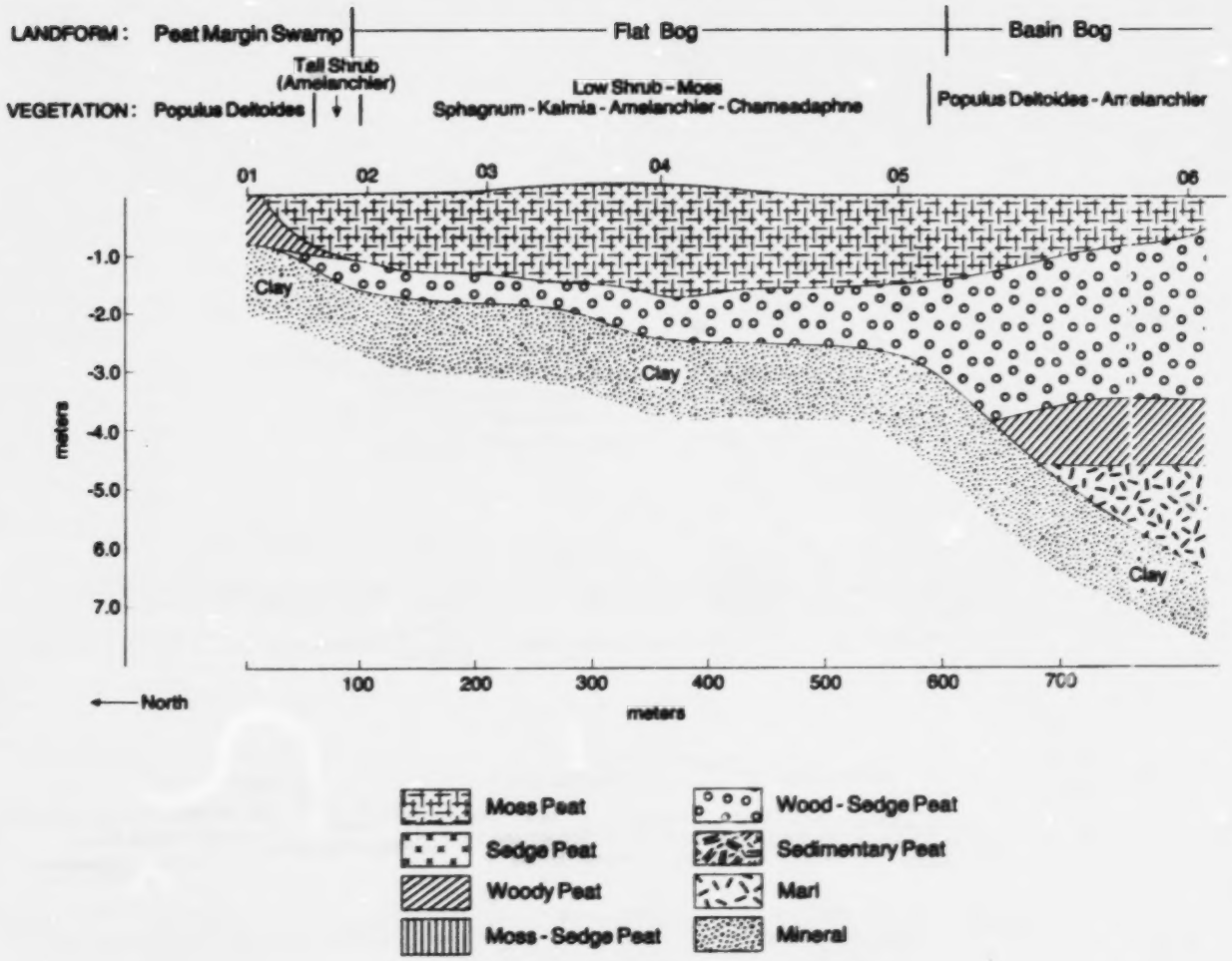


FIGURE 10: Transect 82-05-17, Location 42°55'N 79°17'W, Bearir
Cross-section through a Basin Bog.

There were several minor peatland types identified which include hardwood-tall shrub, tall shrub-grass, and tall shrub-sedge. These peatland types generally occurred within peatland complexes, representing transitional zones between bogs and peat margin swamps, between fen and bog, between swamp and marsh or simply represented disturbed areas. It should be noted that virtually all southern Ontario peatlands have, to varying degrees, been subjected to some form of disturbance. Evidence of such disturbances are reflected by successional competing vegetation species, edge effects, obvious disturbances to the hydrologic regime, agricultural production, and peat extraction.

Work Plan 1983

Throughout the winter of 1982-83 existing methodologies on the calculations of surface and subsurface volumes will be investigated and tested to develop a methodology for the calculation of peat type volumes.

During the winter months several marsh deposits will be surveyed and sampled. The high water levels present in most marshes during the spring to fall seasons make sampling by present methods virtually impossible during these times.

The major proportion of the field work will be completed during the 1983 summer field season. Northern areas not included during 1982 are to be surveyed and sampled. Additional transects will be located on previously sampled deposits where information is lacking. The number of peatland surveys within the Ottawa-Lake Simcoe belt will be increased.

Ontario Geologic Survey is presently carrying out an inventory, block by block, of its peatland resource. An effort will be made to collaborate with the O.G.S. in an attempt to exchange data and provide check of one anothers field work. A joint venture involving the Ontario Center of Remote Sensing will be investigated. The aim is to test the potential and applicability of the O.C.R.S.'s "Aplicon" mapping technique to a selected Southern Ontario situation. This department would supply the ground truthing data.

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TOURBIERES DES BASSES-TERRES DU ST-LAURENT DU QUEBEC. RAPPORT D'ACTIVITES (1982)

Lucie Grenon

RESUME

Ce projet qui a comme objectifs de caractériser les différents types de tourbières dans les Basses-Terres du St-Lawrent et aussi de développer une méthodologie d'inventaire des tourbières a débuté au cours de l'année 1982. Une première étape de documentation sur le sujet a été faite. Le travail de terrain qui s'est déroulé en août, septembre et octobre (29 jours effectifs) nous a permis de caractériser quatre tourbières et un marais.

La méthode des transects (traverses à pied) a été utilisée et les données étaient entrées dans le Registre des Terres Humides du Canada. Ainsi, 69 sites (284 échantillons) ont été échantillonnés en vrac, 25 sites (88 échantillons) l'ont été pout la densité apparente et 9 échantillons d'eau ont été prélevés. Ceci permettra de réaliser des coupes trasversales et de caractériser les tourbières étudiées. Même si quelques problèmes de description morphologique se sont présentés durant le travail de terrain, it semble que les formes de terrain tourbeux, la végétation et les sols semblent concorder à former des zones homogènes.

Pour la prochaine saison de terrain, une dizaine de tourbières seront caractérisées; et de plus, un inventaire de tourbières des Basses-Terres du St-Laurent sera réalisé afin de déterminer la quantité de tourbe dans la région à l'étude (Annexe 2).

1. DOCUMENTATION

La première étape de ce projet a été de prendre les connaissances sur les sols organiques et les tourbières. De la documentation a été remassée sur les méthodes d'inventaire, de cartographie, de classification de ces sols, ainsi que sur ce qui a été fait au Québec au niveau des tourbières. Un guide de français sur une méthode de cartographie des terres humides, regroupant divers documents sur les sujet a donc été commencé et devrait être terminé au cours de l'hiver 1983 (première version à l'usage des pédologues).

2. TRAVAIL DE TERRAIN

Le travail de terrain s'est déroulé de la mi-août jusqu'à la fin d'octobre (29 jours de terrain effectifs). Ainsi, quatre tourbières ont été inventoriées alors qu'un marais a été visité.

TOURBIERE #1: St-Bruno (Comté de Chambly) - 10 jours de terrain
TOURBIERE #2: Baie Vallière (Comté Richelieu-Yamaska) - 1 jour
TOURBIERE #3: Breakeyville (Comté de Lévis) - 8 jours
TOURBIERE #4: Beauséjour (Comté de Lévis) - 7 jours
TOURBIERE #5: Mer Bleue (Comté de Lotbinière) - 3 jours.

2.1 Matériel de méthodes

Pour chacune de ces tourbières, les cartes topographiques et les photos aériennes au 1:20,000 ont servi de base au travail. A partir de cela, des transects qui semblaient recouper les diverses zones de végétation ont été tracés. Sur chacun des transects, les sites étudiés étaient espacés de 200 m (quelquefois 100 m). Les montées se faisaient à pied, en suivant l'orientation à la boussole. La distance entre les sites était comptée en pas.

Pour la plupart des sites, la couche de surface était enlevée avec la pelle,, ensuite nous utilisions une tarière standard ou la tarière Mini-mized Macaulay lorsque l'épaisseur était supérieure à 1,20 mètres.

2.2 Descriptions et échantillonnage

A tous les sites, e horizons et les couches étaient différenciées selon leurs caractères morphologiques. Ainsi, la profondeur, la couleur, la composition botanique et la texture étaient entrées sur la feuille Sols du registre des terres humides, tandis que les autres données, échelle Von Post, fragments grossiers, limites des horizons, consistance, structure, description des racines et une estimation du pourcentage de fibres frottées et non frottées étaient notées sur une autre feuille (qui sera un peu différente pour la prochaine année). Lorsque nécessaire, les diverses couches étaient échantillonnées en vrac et pour certains sites, des échantillons pour la densité apparente étaient prélevés avec la tarière Mini-mized Macaulay, quelques échantillons pour la datation au radio-carbone et pour l'analyse de l'eau ont aussi été pris. Pour chacun des sites, une description de la végétation était faite. (En annexe 1, un exemple de description d'un site est donné).

2.3 Résultats

Pour chacune des tourbières étudiées, le travail se fait d'abord sur les photos aériennes. A partir des sites décrits, nous traçons les limites de la tourbière et les différentes zones qui semblent intégrer des formes de terrain, une végétation et des sols semblables. Ensuite, nous transposons sur une carte topographique, la limite de la tourbière et les transects, en

indiquant les sites décrits et échantillonnés. (Des sections de ces cartes topographiques sont présentées à l'annexe II (en prochette), pour chacune des tourbières).

Lorsque les données d'analyse des sols serond disponibles, nous complèterons les coupes transversales représentatives de chaque tourbière et nous caractériserons les tourbières en faisant une description assez complète de chacune.

3. DISCUSSION

Même si toutes les données ramassées n'ont pas encore été étudiées complètement, il reste que durant le travail de terrain nous avons rencontré quelques difficultés.

La première résidait dans l'identification des matériaux tourbeux. La description de ces matériaux quant à l'origine botanique des fibres étant surtout qualitative et les propriétés chimiques et physiques n'étant que partiellement connues au champ, vu que les analyses no sont pas encore disponibles, il était difficile, dans certains cas, de définir exactement les matériaux tourbeux.

Une autre difficulté au niveau de la description des sols est d'évaluer le pourcentage de fragments grossiers, surtout lorsqu'on utilize seulement la tarière. Plutôt que de donner un pourcentage précis il serait peut-être plus simple de faire des classes de pourcentage. Quant à l'échelle Von Post, elle est difficilement applicable dans certains cas, comme par exemple, pour la sols cultivés.

Les tourbières étudiées cette année semblent se ranger parmi les tourbières oligotrophes (bombée, en bassin, plate) et sont entourées quelquefois par des marécages de bordure. Nous avons aussi inventorié un marais, en partie, nous devons faire quelques autres transects l'an prochain pour compléter l'étude de cette terre humide. Les profondeurs maximales permis les tourbes étaient 1:3.25 m, 2:1.6 m; 3:3.30 m; 4:5.20 m; 5:2.30 m. Jusqu'à présent, les sols, des formes de terrain et la végétation semblent concorder à former des zones assez homogènes.

Pour la prochaine saison de terrain, nous voulons étudier une dizaine de tourbières, soit des marécages, quelques tourbières minérotrophes et d'autres tourbières oligotrophes.

4. PLAN DE TRAVAIL (Déc. 1982 à Nov. 1983)

Activités	Date cible
1. Dessiner les coupes trasversales pour les tourbières inventoriées en 1982	23 décembre 82

2. Dresser la carte de la distribution des tourbières dans les Basses-terres du St-Laurent. Sélection des tourbières à étudier pour la saison de terrain 1983. Commander le matériel nécessaire. 28 janvier 83

3. Date prévue de réception des résultats d'analyses. ler février 83

4. Après réception des résultats, révision des coupes transversales et caractérisation de chacune des tourbières étudiées. 28 février 83

5. Rédiger le rapport annuel. 18 mars 83

6. Ecrire un guide sur une méthode de cartographie des terres humides (première version à l'usage des pédologues). 22 avril 83

7. Préparation du matériel de terrain 6 mai 83

8. Travail de terrain (I.R.P.Q.) Mai, Juin, Juillet 83

9. Travail de terrain pour le projet des tourbières. L'inventaire d'une dizaine de tourbières est prévu. ler août au Juillet 83

10. Envoi des échantillons à faire analyser. 4 novembre 83

11. Traitement des données de terrain de la saison 1983.

ANNEXE 1: Description d'un site (exemple).

REGISTRE DES TERRES HUMIDES AU CANADA

COMITÉ CANADIEN DE LA CLASSIFICATION ÉCOLOGIQUE DU TERRITOIRE—GROUPE DE TRAVAIL SUR LES TERRES HUMIDES

N° de la Station: 3405 | Date: 21 08 82 | Prov. ou Terr.: 06

Nom: LUCIE GRENON

Adresse complète: PAVILLON COMTOIS
CHP 2227
UNIV. LAVAL

CLIMAT — Nom de la Station: ST-RAPHAEL (à venir) | Temp. Moyenne (C°) Jan: | Juillet: | Précip (mm): | Région Forestière: 63 | District et Région des Terres Humides: TE

EMPLACEMENT — No STN: 21L1102072 | Altitude (m): 100 | Latitude: N 46 40 49 | Longitude: W 71 11 48

No. Téléphone: 418-694-7749

Code Postal: G1K-7P4

Quadrillage Universel Transverse de Mercator — Zone | Est (100,000 m) | Nord

CLASSIFICATION DE TERRES HUMIDES: 1.1.3.09

Classe de Terres Humides

(100) Tourbière Oligotrophe (bog)
200 Tourbière Minérotrophe (fen)
300 Marécage
400 Marais
500 Terres Légèrement Submergées

MORPHOLOGIE

Profondeur de la Tourbière (cm)	280
Hauteur (cm)	
Pente (%)	0,7
Étendue de terres humides (ha)	
Périmètre de terres humides (km)	
Étendue de la nappe d'eau libre (ha)	

Forme des Terres Humides

Tourbière Oligotrophe (Bog)
001 Palse
002 Monceau tourbeux
003 En monceau
004 Bombee
005 Plateau tourbeux polygonal
006 Polygones de terres basses
007 Plateau tourbeux
008 Plateau du Nord
009 Plateau Atlantique
010 Effondrée
011 Flottante
012 Littorale
(013) Bassin
014 Plate
015 A côtes
016 En couverture
017 En cuvette
018 Inclinée
019 En plaque

Tourbière Minérotrophe (Fen)
001 Côtelée du Nord
002 Côtelée de l'Atlantique
003 En échelle
004 En réseau
005 Flottante
006 Courante
007 Littorale
008 Effondrée
009 Palse
010 Sourceuse
011 Inclinée
012 Polygones de terres basses
013 Horizontale
014 En chenal

Marécage
001 De courant
002 Littoral
003 De bordure
004 Bassin
005 Plat
006 Inondé
007 Sourceux

Marais
001 Estuaire élevé
002 Estuaire bas
003 Littoral élevé
004 Littoral bas
005 Inondé
006 De courant
007 En chenal
008 Delta actif
009 Delta inactif
010 Bassin terminal
011 Bassin peu profond
012 Dépression
013 Voie d'infiltration
014 Littoral

Terres Légèrement Submergées
001 De courant
002 En chenal
003 Oxbow
004 Delta
005 Bassin terminal
006 Bassin peu profond
007 Dépression
008 Littoral
009 Sans marée
010 De l'estuaire
011 Avec marée

Type de Terres Humides

001 De conifères
002 De feuillus
003 Arbrisseaux
004 Arbustes
005 Grandes herbes
006 Herbes
007 Joncs
008 Laiches
009 Mousses
010 Lichens
011 Aquatiques flottantes
012 Aquatiques submergées
013 Sans végétation

REMARQUES

Sites 3405, 3906, 3908

N° de la Station 3,9,05

HYDROLOGIE

01 Précipitation
02 Eau souterraine
03 Eau de rivière
04 Eau de lac
05 Eau saumâtre
06 Eau salée

TYPE DE PLAN D'EAU ASSOCIÉ

07 Mare peu profonde
08 Lac peu profond
09 Lac
10 Voie d'eau
11 Chenal créé par la marée

NIVEAU DE LA NAPPE PHRÉATIQUE

Max. (cm) | Min (cm)

Date

NO.	Date	Niv. de la Nappe Phréatique (cm)
01	09/82	00

ANALYSE DE L'EAU

NO.	N° Lab.	pH	Conductivité (mmhos/cm)	Cations (ppm) Ca^{++}	Mg^{++}	Na^{+}	Cations (ppm) Totaux	Anions (ppm) SO_4^{--}	Cl^{-}	HCO_3^{-}	Anions (ppm) Totaux
01	?										
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											

TYPE DE L'EAU UTILISÉ POUR L'ANALYSE

	1	2	3	4	5	6
Eau souterraine						
Eau de rivière						
Eau de lac						
Eau saumâtre						
Eau du sol	—					

REMARQUES

56

N° de la Station 3,4,10,5

SOLS

MORPHOLOGIE

NO	Dé Lér	Horizons et Couches Organiques	Sulfures	Imprégnation	Profondeur (cm) Limite Supér	Profondeur (cm) Limite Infér	Couleur Aspect	Couleur Teinte	Couleur Symbole	Couleur Valeur	Couleur Chroma
01		O	f	1	0	20		10	YR	40	40
02		O	F	2	20	80		7.5	YR	30	30
03		O	M	1	80	130		10	YR	20	20
04		O	M	2	130	280					
05	2	C	G		280	+					
06											
07											
08											
09											
10											
11											
12											

ASPECT DE LA COULEUR
m - humide
d - sec
g - gelé

CLASSIFICATION

Organique
01 Fibrisol typique
02 Fibrisol mésique
03 Fibrisol humique
04 Fibrisol limnique
05 Fibrisol cumulique
06 Fibrisol terrique
07 Fibrisol mésique terrique
08 Fibrisol humique terrique
09 Fibrisol hydrique
10 Mésisol typique
11 Mésisol fibrique
12 Mésisol humique
13 Mésisol limnique
14 Mésisol cumulique
15 Mésisol terrique
16 Mésisol fibrique terrique
17 Mésisol humique terrique
18 Mésisol hydrique
19 Humisol typique
20 Humisol fibrique
21 Humisol mésique
22 Humisol limnique
23 Humisol cumulique
24 Humisol terrique
25 Humisol fibrique terrique
26 Humisol mésique terrique
27 Humisol hydrique

Gleysolique
28 Gleysol humique orthique
29 Gleysol humique régosolique
30 Gleysol humique terrique
31 Gleysol orthique
32 Gleysol régosolique
33 Gleysol terrique
34 Gleysol luvique orthique
35 Gleysol luvique humique
36 Gleysol luvique terrique
37 Gleysol luvique fragique

Cryosolique
38 Cryosol organique fibrique
39 Cryosol organique mésique
40 Cryosol organique humique
41 Cryosol organique fibrique terrique
42 Cryosol organique mésique terrique
43 Cryosol organique humique terrique
44 Cryosol organique glacique
45 Cryosol turbique gleysolique
46 Cryosol static gleysolique

MATÉRIAUX TOURBEUX ET LIMNIQUES

	1	2	3	4	5	6
Tourbe de sphaignes	—	—				
Tourbe fennique de mousses brunes						
Tourbe fennique de laiches						
Tourbe fennique de bois			—			
Tourbe forestière de bois						
Tourbe forestière de mousses			—	—		
Tourbe forestière de lichens						
Tourbe aquatique						
Tourbe mixte						
Marne						
Diatomées						
Coprogène						

TEXTURE

SOLS MINÉRAUX

	1	2	3	4	5	6
Sable						
Sable loameux						
Loam sableux						
Loam					—	
Loam limoneux						
Limon						
Loam sablo-argileux						
Loam argileux						
Loam limo-argileux						
Argile sableuse						
Argile limoneuse						
Argile						
Argile lourde						

SOLS ORGANIQUES

	1	2	3	4	5	6
Fibrique						
Mésique						
Humique						

REMARQUES

SITE 3405

| HORIZONS | ECHELLE VON POST | FRAGMENTS GROSSIERS (%) | LIMITES DE L'HORIBON | | | | CONSISTANCE | | | | | STRUCTURE | | | DESCRIPTION DES RACINES | | | | |

N° de la Station 3,9,05

DONNÉES DES SOLS
DONNEES CHIMIQUES

NO.	NO DE LABORATOIRE DE L'ÉCHANTILLON	PH 1 VALEUR	PH 2 VALEUR	CARBONE ORGANIQUE (%)	PYROPHOSPH SOL (%)	N-TOTAL (%)	CONDUCTIVITÉ ÉLECTRIQUE (mmhos/cm)	C.E.C. (me/100g)	CATIONS ÉCHANGEABLES SEL NEUTRE (me/100g) Ca	Mg	Na	K
0 ; 1												
0 ; 2												
0 ; 3												
0 ; 4												
0 ; 5												
0 ; 6												
0 ; 7												
0 ; 8												
0 ; 9												
1 ; 0												
1 ; 1												
1 ; 2												

DONNÉS PHYSIQUES

NO.	ANALYSE GRANULOMÉTRIQUE (%) DE L'ÉCHANTILLON SABLE TRÈS G.	SABLE GROS	SABLE MOY.	SABLE FIN	SABLE T.F.	SABLE TOTAL	LIMON 75-2µ	LIMON 50-20µ	ARGILE < 2µ	ARGILE < 1µ	DENSITÉ APPARENTE (g/cc)	Humidité (%)	Biaxe (%)	FIBRE FROTTÉE (%)	FIBRE NON FROTTÉE (%)	CENDRES (%)
0 ; 1																
0 ; 2																
0 ; 3																
0 ; 4																
0 ; 5																
0 ; 6																
0 ; 7																
0 ; 8																
0 ; 9																
1 ; 0																
1 ; 1																
1 ; 2																

R.C.

R.C.

REMARQUES

pH

Valeur du pH I
Condition de l'échantillon
T 081 Condition au champ
T 082 Séché à l'air

Méthode
T 031 Eau 1:1
T 032 Eau 1:5
T 033 Saturé d'eau
T 034 $CaCl_2$
T 035 KCl
T 036 NaF

Valeur du pH2
Condition de l'échantillon
T 041 Condition au champ
T 042 Séché à l'air

Méthode
T 051 Eau 1:1
T 052 Eau 1:5
T 053 Saturé d'eau
T 054 $CaCl_2$
T 055 KCl
T 056 NaF

CATIONS ÉCHANGEABLES

Sols neutres
Extraction
T 141 $CaCl_2$
T 142 KCl
T 143 NaCl
T 144 $BaCl_2$
T 145 K_2SO_4

Méthode de détermination
T 151 Titrage à l'EDTA
T 152 Titrage au phosphate
T 153 Titrage à l'ETOH
T 154 Titrage à l'albumine
T 155 Photométrie à flamme
T 156 Absorption atomique
T 157 Auto-analyseur

CAPACITÉ D'ÉCHANGE CATIONIQUE

Charge permanente
T 121 Sol neutre, méthode saturante
T 122 Sol neutre, méthode abrégée

CARBONE ORGANIQUE

T 081 Combustion sèche, four à induction
T 082 Combustion humide (Allison)
T 083 Combustion humide (Walkley-Black)
T 084 Combustion sèche, four à chromatel
T 085 Solubilité au pyrophosphate

AZOTE TOTAL

T 071 Semi-micro NO_3 et NO_2 inclus
T 072 Semi-micro NO_3 et NO_2 non inclus
T 073 Micro-kjeldahl NO_3 et NO_2 inclus
T 074 Micro-kjeldahl NO_3 et NO_2 non inclus
T 075 Micro kjeldahl
T 076 Analyseur d'N

FIBRE FROTTÉE

T 081 Évaluation visuelle
T 082 Syringue
T 083 Gravimétrie

FIBRE NON FROTTÉE

T 511 Évaluation visuelle
T 512 Seringue
T 513 Gravimétrie

POURCENTAGE DE CENDRES

T 521 Combustion
T 522 Oxydation dans liquide

ANALYSE GRANULOMÉTRIQUE

Traitement initial
Élimination de :
T 531 Carbonates
T 532 Matière organique
T 533 Sesquioxydes
T 534 Sels

Dispersion
T 541 Hexamétaphosphate de Na
T 542 Hydroxyde de Na
T 543 Par ultra-sons

Méthode
T 551 Pipette
T 552 Hydromètre
T 553 Plomb
T 554 Décantation
T 555 Tamisage par ultra-sons
T 556 Rayons-X
T 557 Tamisage à l'eau

DENSITÉ APPARENTE

Condition de l'échantillon
T 561 Condition au champ
T 562 Séché à l'air
T 563 Séché au four
T 564 30 cm absorption
T 565 1/3 bar désorption

Sols organiques
T 561 Carotte
T 562 Échantillonneur McCauley
T 563 Panneau à tiges d'acier pour échantillonnage.

SOLUBILITÉ AU $PYROPHOSPHATE_2$

T 840 Données visuelles
T 841 Spectrophotomètre

VÉGÉTATION

N° de la Station 3405

Type de végétation: TOURBIERE A SPHAIGNE ET KALMIA

Superficie de la parcelle (m²)	
Couverture arborescente (%)	-
Arbustes hauts (> 1.5 m) Couv. (%)	-
Arbustes moyens (0.5 – 1.5 m) Couv. (%)	20
Arbustes bas (0.1 – 0.5 m) Couv. (%)	40
Arbustes de terre (< 0.1 m) Couv. (%)	10
Herbes,Couv. (%)	30
Mousses et Lichens,Couv. (%)	90
Flottantes et Submergées,Couv. (%)	

Exposition: 1. Minimum 2. Modérée 3. Sévère
Homogénéité: 1. Continue 2. Discontinue 3. Inégale 4. Rare
Micro-relief: 1. Plan 2. Convexe 3. Concave 4. Mixte 5. Mouvementé 6. Ondulé 7. Autre

Données Concernant Les Arbres

NOM DES ESPÈCES	HAUTEUR (m)	D.H.P. (CM)	AGE (ANS)	CLASSE DE LA COURONNE
MELEZE	2			
EPINETTE	1			

NOM DES ESPÈCES	ARBRES COUV. SOC.	ARBUSTES COUV. SOC.	HERBES COUV. SOC.	MOUSSES ET LICHENS COUV. SOC.	FLOTTANTES ET SUBMERGÉES COUV. SOC.
MELEZE		10			
EPINETTE		20			
CASSANDRE		20			
ANDROMEDE		10			
KALMIA		30			
VACCINIUM OXYCOCOS		20			
LEDUM		10			
CAREX			40		
SARRACENIE			10		
SPHAIGNE				90	

REMARQUES

60

CARTES ET COUPES TRANSVERSALES (PRELIMINAIRES)

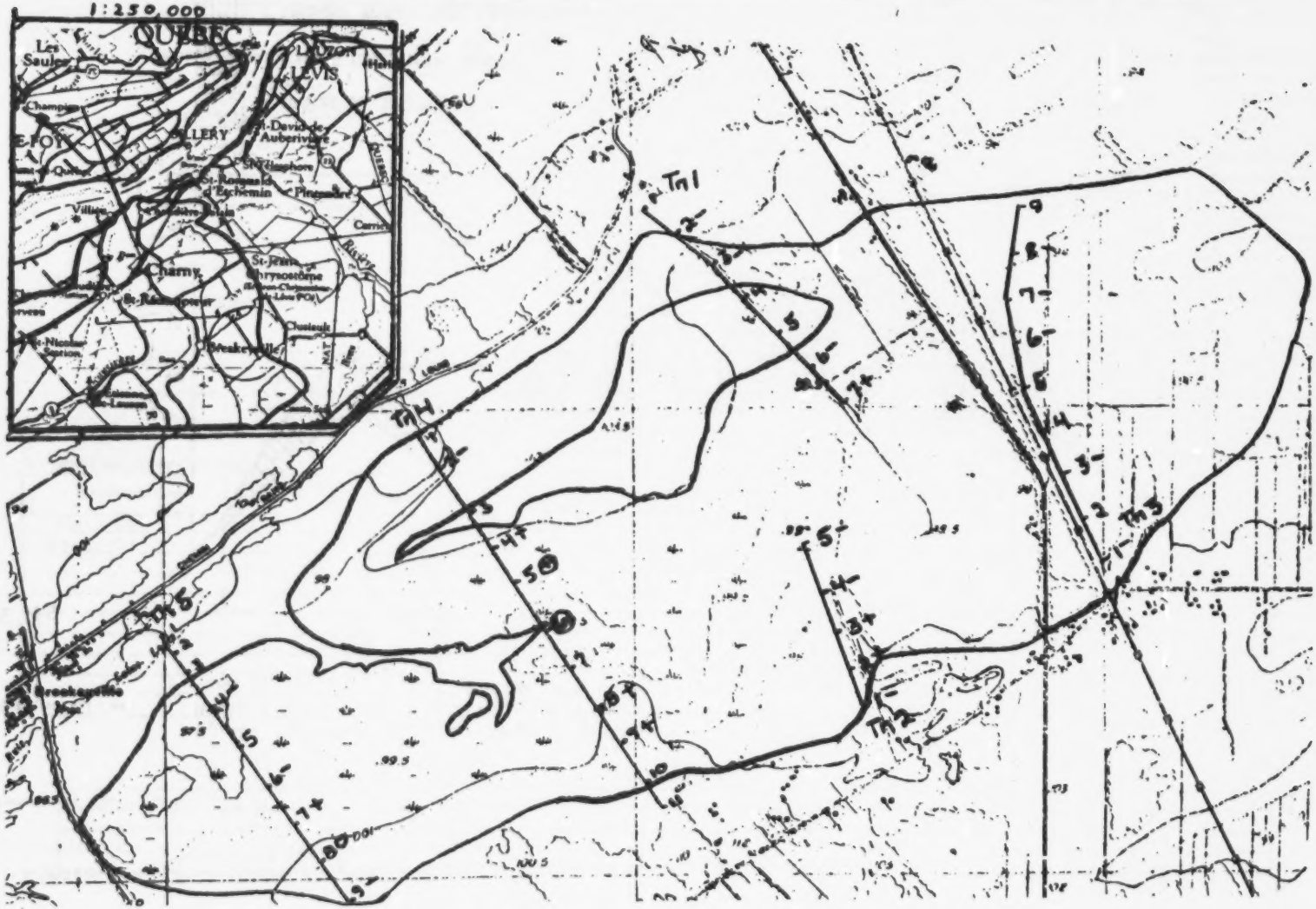
Tourbière # 3 Breakeyville
Transect # 4

N° de la Station 3,4,0,5

| | | |

Tourbière #3. Breakeyville

CARTES ET COUPES TRANSVERSALES Topo 21L-11 200-0202 St-Henri 1:20,000 N° de la Station 3.1.05



ANNEXE 2: Situation des tourbières étudiées.

1. Carte de la région à l'étude. Les Basses-Terres du St-Laurent du Québec.
   Situation des cinq tourbières étudiées.

2. Cartes détaillées des cinq tourbières étudiées.
   - Tourbière #1: St-Bruno (Comté Chambly)
   - Tourbière #2: Baie Vallière (Comté Richelieu et Yamaska)
   - Tourbière #3: Breakeyville (Comté Lévis)
   - Tourbière #4: Beauséjour (Comté Lévis)
   - Tourbière #5: Mer Bleue (Comté Lotbinière)

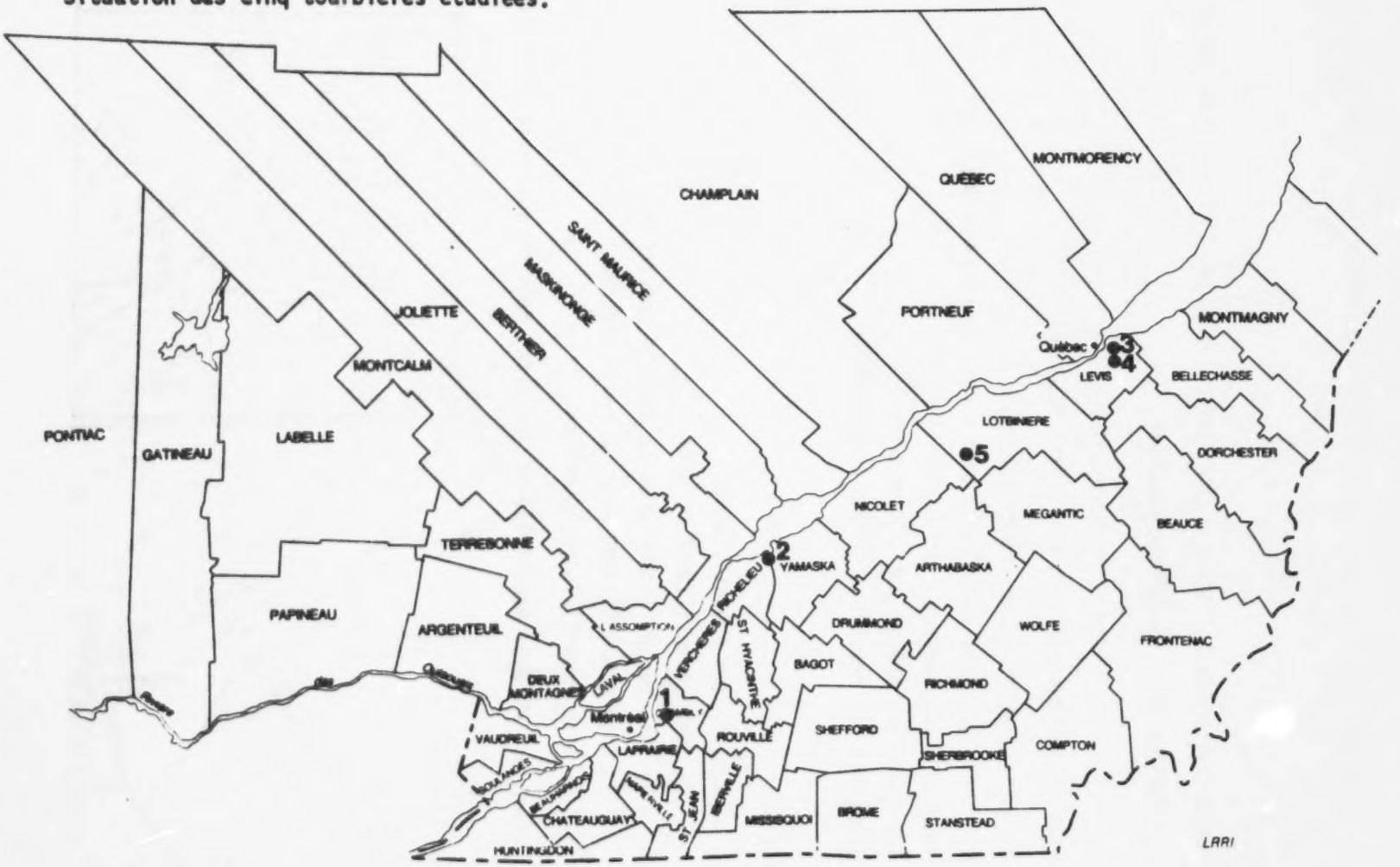
   LEGENDE:

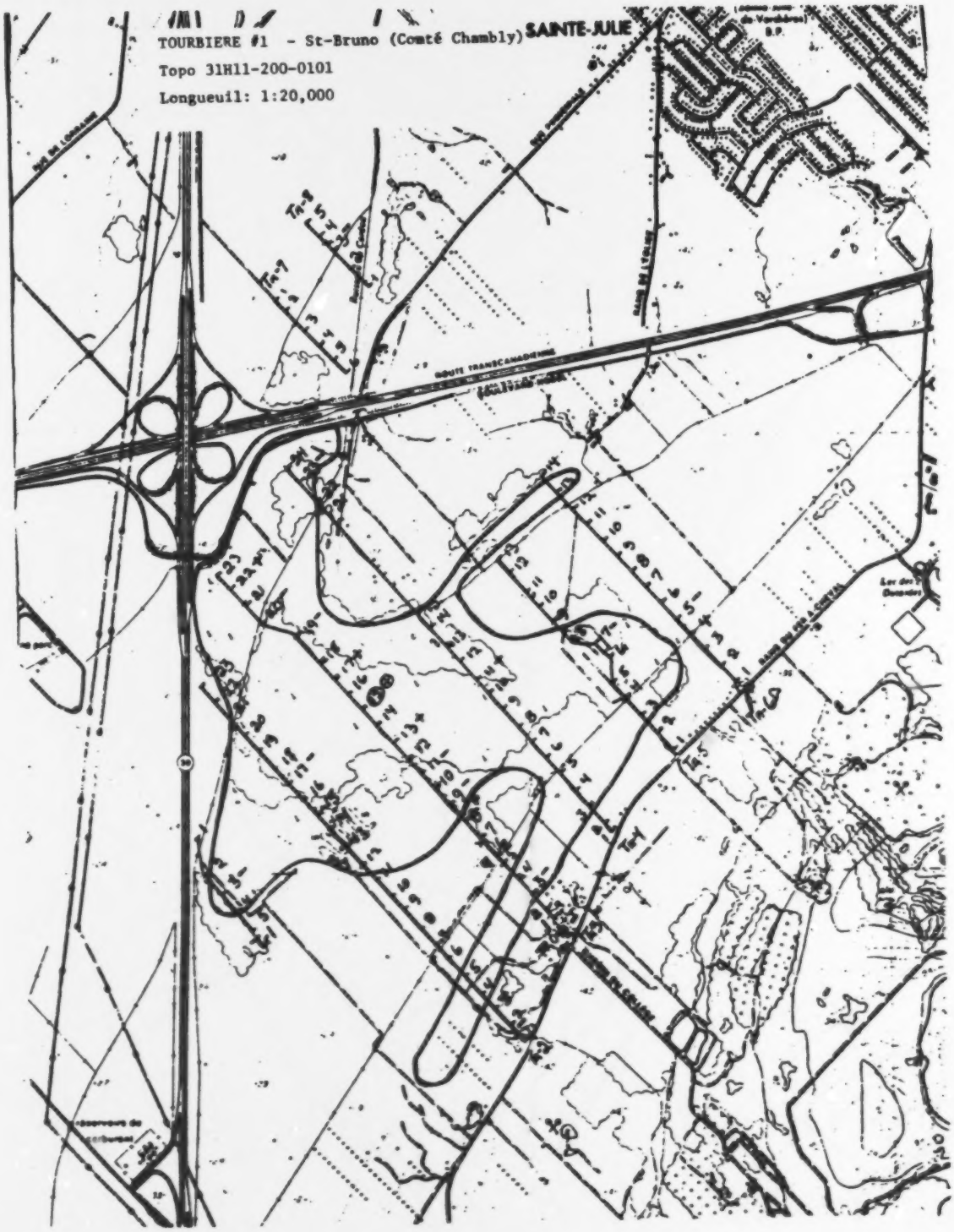
   7 Site non échantillonné
   7- Site échantillonné en vrac
   7ı Site échantillonné pour la densité apparente
   7o Site échantillonné pour le radio-carbone
   ⑦ Site échantillonné pour l'eau

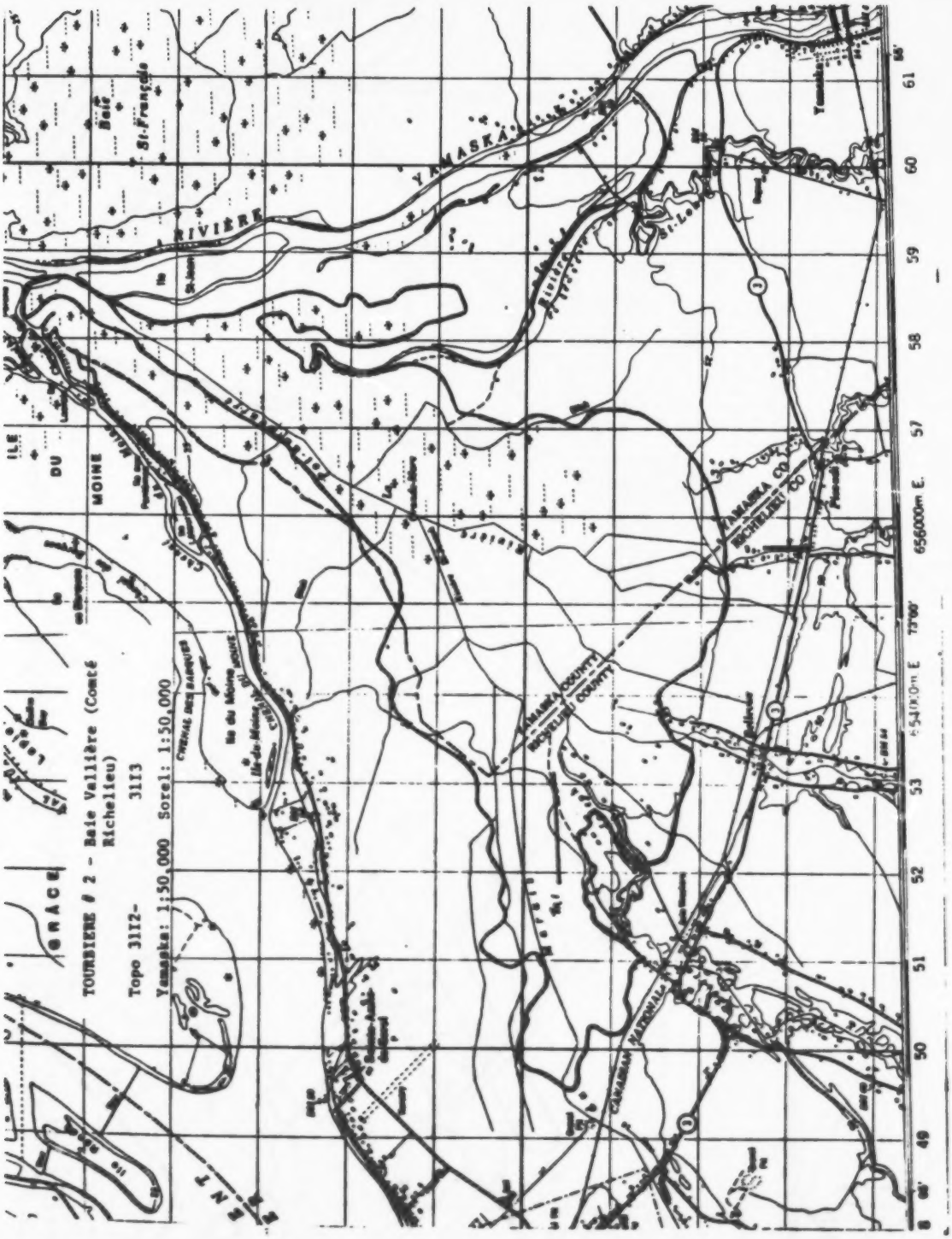
   Exemple: 7⊕ Site échantillonné: en vrac, densité apparente, radio-carbone.

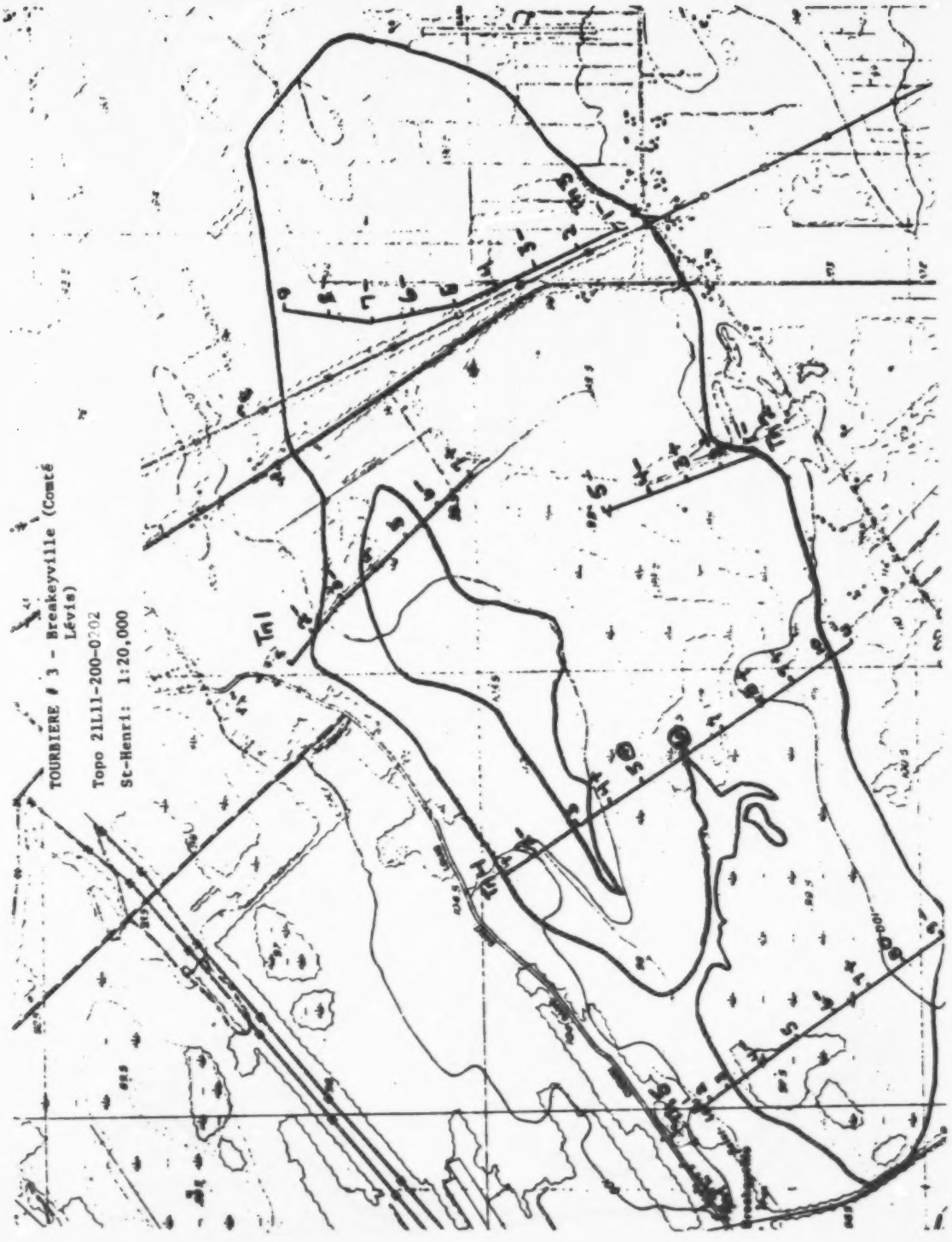
LES BASSES-TERRES DU ST-LAURENT DU QUEBEC

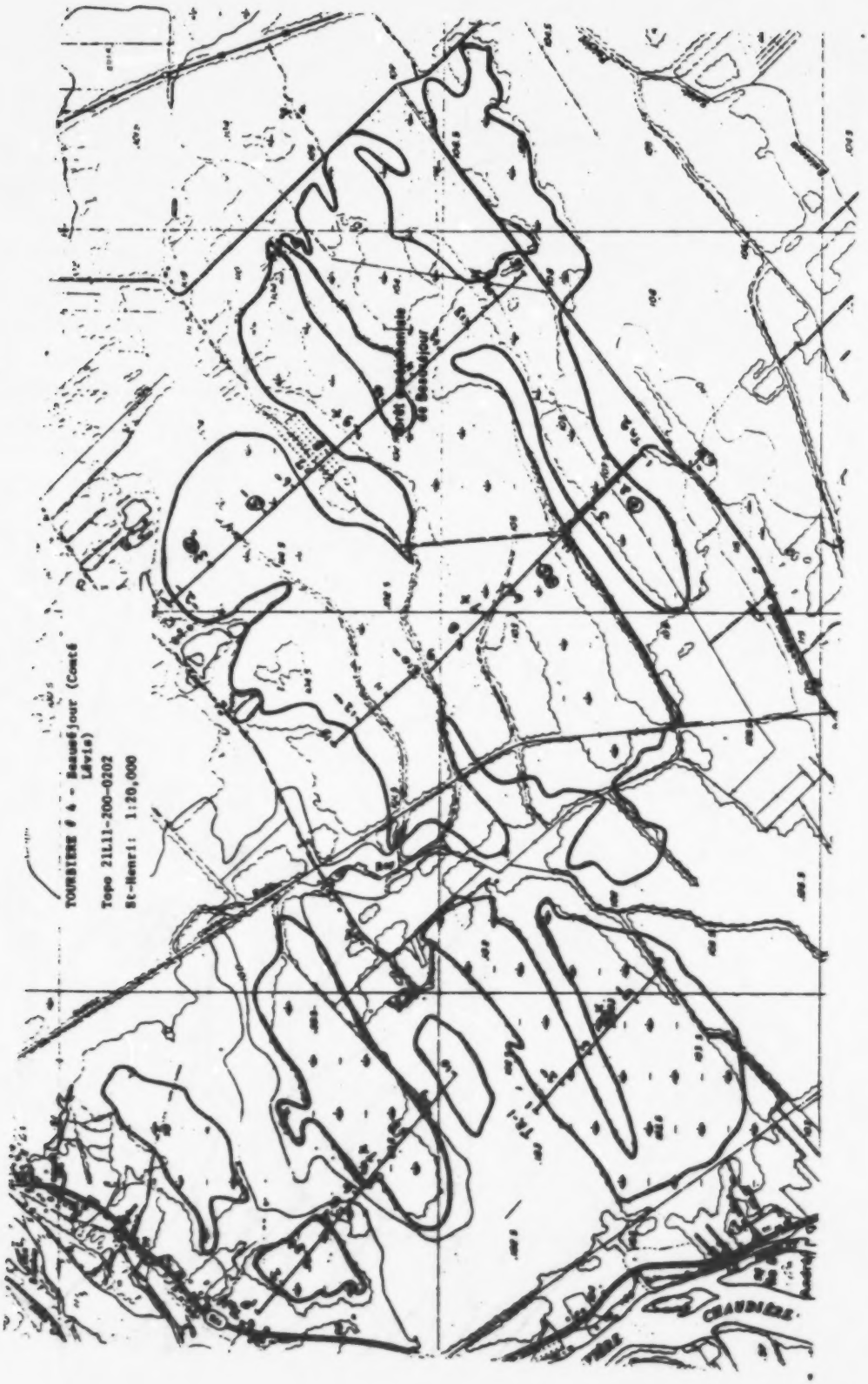
Situation des cinq tourbières étudiées.

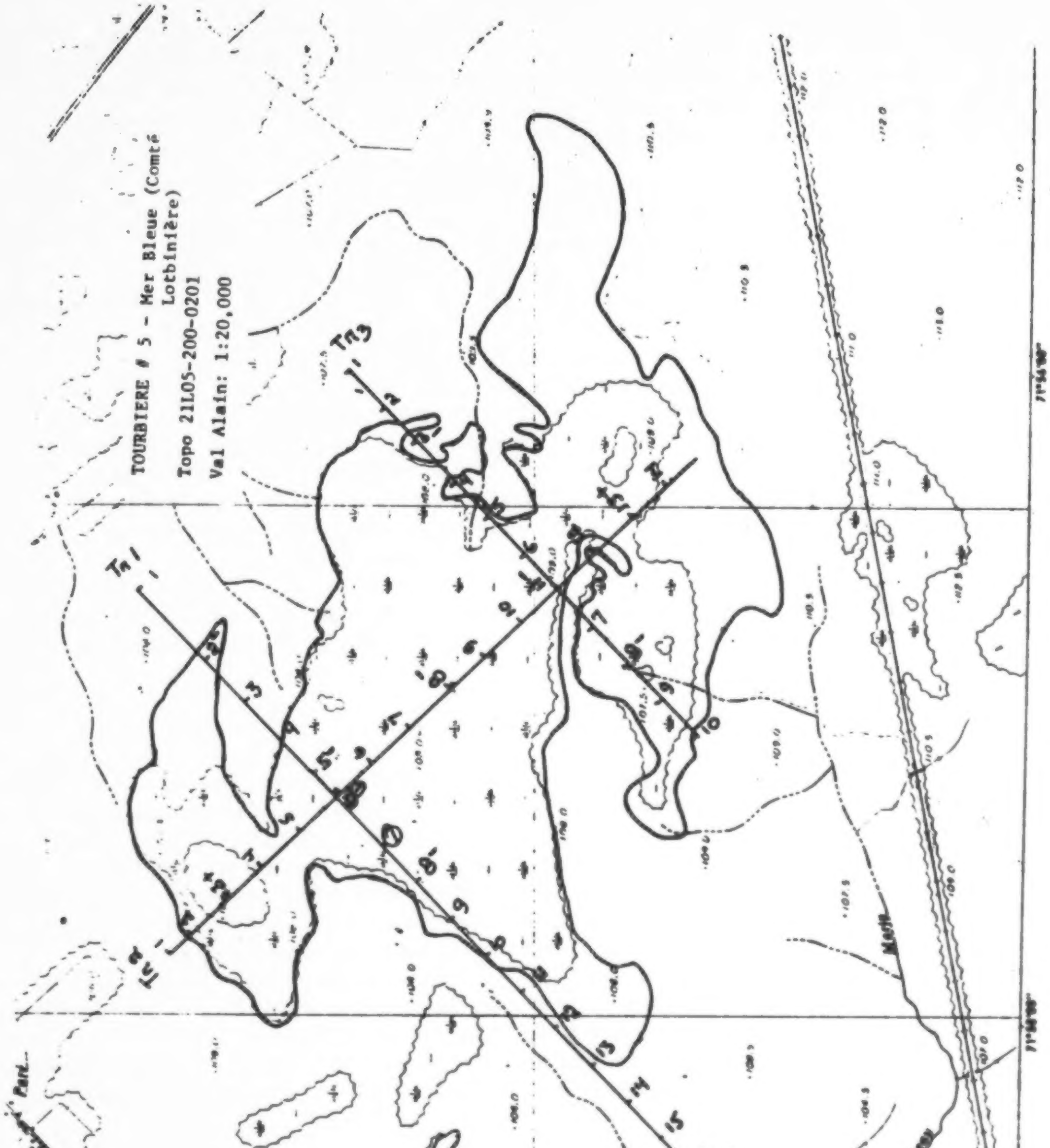



TOURBIERE #1 - St-Bruno (Comté Chambly)
Topo 31H11-200-0101
Longueuil: 1:20,000
SAINTE-JULIE


TOURBIERE # 2 - Baie Vallière (Comté Richelieu)
Topo 31I2-
3113
Yamaska: 1:50,000 Sorel: 1:50,000
ILE DU MOINE
RIVIERE YAMASKA
St-François
St-Louis
YAMASKA CO
RICHELIEU CO
YAMASKA COUNTY
RICHELIEU COUNTY
CANADIAN NATIONAL
5419.0m E
656000m E.
73°00'
45° 00'


TOURBIÈRE # 3 - Breakeyville (Comté Lévis)
Topo 21L11-200-0702
St-Henri: 1:20,000


TOURBIERE # 4 - Beauséjour (Comté Lévis)
Topo 21L11-200-0202
St-Henri: 1:20,000
Parc Beauséjour
St-Beauséjour
CHAUDIERE


TOURBIERE # 5 - Mer Bleue (Comté
Lotbinière)
Topo 21L05-200-0201
Val Alain: 1:20,000
Tn1
Tn2
Tn3

COMPUTERIZED CANADIAN WETLAND REGISTRY

Charles Tarnocai

ABSTRACT

The Canadian Wetland Registry, which was set up as a manual system in 1980, will be converted to a computerized system. During this year the registry was updated and finalized and work began on converting the entries included in the registry to a computer-compatible format.

INTRODUCTION

The Canadian Wetland Registry (Tarnocai 1980) was set up to collect wetland dat uniformly across the country. This uniformity enables the data to be compared and analyzed regardless of where, and by whom, it was collected. The Caradian Wetland Registry includes information about the wetland classification, hydrology, vegetation, and soils (peat stratigraphy) and a cross-section of the wetland. The registry has been designed to handle this information manually. During the past few years, however, an increasing amount of information has been collected and recorded in this registry. Storing, handling and evaluating this information manually has become increasingly difficult and conversion of the registry to a computerized system was the local solution.

During the next three years a computerized Canadian Wetland Registry system, which will be capable of storing and analyzing wetland information, will be set up.

ACTIVITIES DURING 1982

The existing Canadian Wetland Registry was reviewed and updated to satisfy a variety of wetland projects, especially those dealing with detailed peatland characterization and energy related studies of Canadian peatlands. This updates registry was then used for recording data on peatland studies carried out in the St. Lawrence Lowland and along the Pacific Coast of British Columbia during the summer of 1982. Based on the experience gained at this time, furthe modifications were made and the registry forms were finalized. Work began in the fall of 1982 on converting the entries included in the registry to a computer-compatible format. Before the end of this fiscal year a trial run, including the input and output of a sample of peatland data, will be made.

PLANTS FOR 1983-84

Early in 1983 test runs will be made in order to remove the "bugs" from the system. This will be followed by the input into the computerized system of peatland data collected during

1982-84. Analysis of the peatland data stored in the computerized registry will then begin.

REFERENCE

Tarnocai, C. 1980. Canadian Wetland Registry. Proc. of a Workshop on Canadian Wetlands, Edited by C.D.A. Rubec and F.C. Pollett, Environment Canada, Lands Directorate, Ecological Land Classification Series No. 12, p. 9-38.